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USES AND ABUSES OF THE MALE SEX HORMONE

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The consensus is that the male sex hormone is testosterone in active chemical combination. It is usually administered in the form of the propionate. About eleven years have now elapsed since its isolation by Laqueur and his colleagues [1] and its synthesis by Ruzicka [2] and by Butenandt,[3] and there has been an opportunity to observe its effect in various diseases. In order to carry out treatment with male sex hormone intelligently, it is necessary to bear in mind certain fundamental considerations. The use of this material represents substitution therapy, whereas the use of various gonadotropins represents stimulation therapy.

The testis contains two structures which have different functions although their functions are related.[4] The seminiferous tubules produce spermatozoa while the interstitial cells of Leydig produce male sex hormone. The testis may fail because of some defect in the testis itself (primary hypogonadism) or because of lack of adequate stimulation, notably by the anterior lobe of the pituitary (secondary hypogonadism). There is a close relationship between the functions of the pituitary and the gonads. The follicle-stimulating material produced by the anterior lobe of the pituitary influences the function of the seminiferous tubules, while the luteinizing material stimulates the interstitial cells of the testis to produce male sex hormone. The hormone thus produced inhibits the pituitary so that a delicate balance exists.

Three types of gonadotropins are available: pituitary gonadotropin from the pituitary itself; equine gonadotropin from the serum of the pregnant mare, and chorionic gonadotropin from the urine of pregnant women. Pituitary and equine gonadotropin are theoretically desirable because they contain both follicle-stimulating and luteinizing material, but in the male they are not particularly effective. Chorionic gonadotropin is decidedly effective for stimulation therapy. It is luteinizing material and stimulates the production of male sex hormone, but it has little effect on the seminiferous tubules.

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1. David, K.; Dingemanse, E.; Freud, J., and Laqueur, E.: Ueber krystallinisches männliches Hormon aus Hoden (Testosteron), wirksamer als aus Harn oder aus Cholesterin bereitetes Androsteron, Ztschr. f. physiol. Chem. **233**: 281, 1935.

2. Ruzicka, L.; Wettstein, A., and Kägi, H.: Sexual Hormone: VIII. Darstellung von testosteron unter Anwendung gemischter Ester, Helvet. chim. acta **18**: 1478, 1935.

3. Butenandt, A., and Hanisch, G.: Ueber Testosteron: Umwandlung des Dehydro-androsterons in Androstendiol und Testosteron; ein Weg zur Darstellung des Testosterons aus Cholesterin, Ztschr. f. physiol. Chem. **237**: 89 (Nov.) 1935.

4. Moore, C. R.: Physiology of the Testis, in Glandular Physiology and Therapy, Chicago, American Medical Association, 1942.

USES OF THE MALE SEX HORMONE

Testosterone propionate is a potent therapeutic agent and its use is indicated chiefly in cases of primary hypogonadism in the male, namely, those in which the defect is in the testis itself. Its most important uses [5] are in the treatment of the following conditions: (1) eunuchism; (2) primary eunuchoidism; (3) bilateral intra-abdominal undescended testes when there is no response to chorionic gonadotropin; (4) the Frölich syndrome associated with bilateral intra-abdominal cryptorchism; (5) pituitary dwarfism; (6) the male climacteric; (7) impotence from glandular causes; (8) Cushing's syndrome; (9) Addison's disease, and (10) hypopituitarism with secondary hypogonadism in old men.

Eunuchism.—The most clear-cut indication for the use of the male sex hormone is in patients showing loss of both testes. The effect of this material in eunuchism is well illustrated by its effect on a man aged 32 who lost both testes as a result of a bullet wound in the scrotum suffered while in combat with the Japs on Luzon in the Philippine Islands. Shortly after the removal of his testes, he began to feel listless, pepless and nervous. He suffered from hot flushes, and his erections and libido disappeared. It is of some interest that the hot flushes he described were similar to those occurring during the menopause in the female. He would suddenly break out in perspiration and have a sensation of blood rushing to his head. His beard grew much more slowly, and some hair disappeared in patches all over his body. He shaved only every third day instead of daily as previously. There was no change in the pitch of his voice, but he was extremely embarrassed about his condition and developed an inferiority complex. He gained about 30 pounds (14 Kg.), although it should be pointed out that obesity is by no means always associated with eunuchism. Some eunuchs and eunuchoid persons are thin. The patient was given testosterone propionate in a dose of 25 mg. three times a week by intramuscular injection, and after only a few doses he became much more aggressive and energetic. His erections returned, his beard grew faster and his hot flushes disappeared. After a few weeks it was necessary to discontinue treatment for a time, and within seven to ten days his symptoms returned. They disappeared promptly when the material was given again. This man has a permanent defect, and it will, of course, be necessary for him to receive treatment for the rest of his life. The minimum amount of material necessary

5. Thompson, W. O., and Heckel, N. J.: Sex Hormones: Clinical Application, Rhode Island M. J. **24**: 145 (Aug.) 1941. Thompson, W. O.: The Clinical Use of Extracts from the Testes and of Synthetic Products Having Similar Actions, J. A. M. A. **125**: 15 (May 6) 1944.

to keep his symptoms under control has not been determined, but 25 mg. once a week has proved to be inadequate.

If a person loses his testes at an early age, it is probably desirable to delay treatment with the male sex hormone until the tenth to the twelfth year of age; namely, the age at which puberty normally sets in. Treatment should then be given continuously for the rest of the patient's life. It is important not to delay treatment beyond this age, because the presence of hypogonadism during puberty results in skeletal disproportions, notably a short trunk and long extremities and a tendency to narrow shoulders and knock knees. It is only when the treatment is given during the age of puberty that all the effects of the male sex hormone on secondary sex characteristics become maximum. A young eunuch treated in the manner indicated with male sex hormone will become normal in every respect except for his ability to reproduce.

Primary Eunuchoidism.—Eunuchoidism represents partial loss of testicular function, which may vary from a slight deficiency to almost complete loss of function. It is commonly but not necessarily associated with bilateral intra-abdominal cryptorchism. It should be pointed out that even when both testes remain permanently in the abdominal cavity, enough male sex hormone is often produced to result in development of the penis to a normal size and in fairly normal development of the musculature. However, such men always have some evidence of deficiency, as indicated by the inadequate development of bodily hair and the complete absence of spermatogenesis. A greater deficiency of male sex hormone may be present with both testes in the scrotum than with both testes in the abdominal cavity. Eunuchoidism may be primary or secondary in type, the secondary variety being the result of lack of adequate stimulation by the anterior lobe of the pituitary. The two types can be differentiated chemically by determination of the follicle-stimulating hormone in the urine. When present in normal or increased amounts, it indicates that the stimulating mechanism in the pituitary is normal, but the testes are unable to respond. The two types may be differentiated therapeutically by the administration of chorionic gonadotropin in a dose of 500 to 1000 international units three times a week by intramuscular injection. If the genitalia develop, it may be assumed that the testes are capable of responding to stimulation and that the stimulating mechanism is inadequate. This phenomenon is shown by the case of a 32 year old man with a small testis in the inguinal canal on each side. With chorionic gonadotropin, his testes descended into the scrotum, his penis grew, the pitch of his voice became somewhat lower and he gained about 25 pounds (11 Kg.). He did not show maximum improvement, however, until male sex hormone was given. The testes may have been damaged by remaining for such a long time in their abnormal environment.

Treatment of eunuchoidism is similar to that of eunuchism. In particular, it is important to begin treatment with male sex hormone at the age when puberty normally sets in. Since the condition is secondary in a considerable number of cases, it is probably best to use stimulation therapy with chorionic gonadotropin first and then resort to treatment with testosterone propionate if improvement fails to occur or does not become maximum. In eunuchs and in eunuchoid men completely undeveloped sexually, the administration of male sex hormone in adequate doses produces the following changes:[6] (1) gradual appearance of the secondary sex characteristics of the adult male; (2) remarkable increase in appetite and weight: patients may gain as much as 40 pounds (18 Kg.) in four months but do not become obese; (3) an increase in the basal metabolic rate of as much as 30 points; (4) an increase in vigor and sense of well-being, and (5) the loss of feminine characteristics.

The Fröhlich Syndrome and Undescended Testes.—In the treatment of the Fröhlich syndrome and undescended testes, the administration of testosterone propionate is not indicated unless both testes are in the abdomen and incapable of responding to stimulation. This state of affairs does not often obtain in the Fröhlich syndrome. The male sex hormone inhibits the normal testis and if given in large doses may cause azoospermia. It is therefore desirable to use stimulation therapy whenever the testis is capable of responding. Glandular treatment in the Fröhlich syndrome should be started at the age at which puberty normally sets in and continued until epiphyseal closure occurs.

The treatment of undescended testes should be started by the age of 3 years. Glandular therapy should be continued until moderate genital growth takes place. If descent has not occurred by this time, the testes should be brought into the scrotum by surgical intervention.[7]

Pituitary Dwarfism.—The male sex hormone is a potent stimulator of growth. In young boys receiving it for undescended testes and the Fröhlich syndrome, the growth in height is greatly accelerated and bone age increases rapidly. It is not a substitute for the growth factor of the pituitary or for the thyroid hormone, and without these substances the skeleton cannot attain normal height. Because of its growth-promoting properties, it is of some value in treating patients with pituitary dwarfism, in order to make sure that the growth associated with puberty takes place. There is no particularly effective commercial preparation of the growth factor of the pituitary available at the present time. The male sex hormone should be used in pituitary dwarfism only if both testes are in the abdominal cavity and incapable of responding to chorionic gonadotropin, and this is not often the case in pituitary dwarfs. In almost all instances chorionic gonadotropin is the material of choice. Treatment with chorionic gonadotropin and male sex hormone should not be started in pituitary dwarfs until about the twelfth year. If it is started much earlier, the bones may age rapidly, and epiphyseal closure may set in before the skeleton has had an opportunity to derive the benefits of whatever growth might take place without the intervention of the male sex hormone.

Male Climacteric.—In some men the production of male sex hormone falls off as they grow older. The decrease in production is sometimes great enough to produce definite symptoms, such as hot flushes, nervousness, irritability, palpitation, a decrease in mental acuity and physical stamina and other symptoms similar to those of the menopause in the woman. These symptoms are well illustrated by the case of the soldier described previously who lost both his testes in the war. There is no clear-cut epoch in the male comparable to the menopause in the female, and the male climacteric is not common. It is important not to conclude that every old man who is tired is suffering from the male

6. Thompson, W. O., and Heckel, N. J.: Male Sex Hormone: Clinical Application, J. A. M. A. **113**: 2124 (Dec. 9) 1939.
7. Thompson, W. O., and Heckel, N. J.: Undescended Testes: Present Status of Glandular Treatment, J. A. M. A. **112**: 397 (Feb. 4) 1939.

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climacteric. This diagnosis should be made only after the most careful search has been carried out to discover some other cause for the symptoms.

Impotence from Glandular Causes.—Impotence is a symptom and not a disease. It may, of course, be associated with hypogonadism in varying degrees, and it is then rather promptly relieved by the administration of male sex hormone or chorionic gonadotropin, whichever is indicated. It is often psychogenic or neurogenic in origin, and when this is the case glandular therapy is ineffective.

Cushing's Syndrome.—The use of the male sex hormone has been recommended in Cushing's syndrome because it promotes the retention of nitrogen. It seems to be of some value in those patients who show a negative nitrogen balance.

Addison's Disease.—In many patients with Addison's disease, there is loss of all functions of the adrenal cortex, including the production of androgen. Such patients are rather listless and pepless even after adequate treatment with adrenal cortex extract or desoxycorticosterone acetate. In men the lack of adequate development of secondary sex characteristics is also observed. The beard is usually deficient, and there is usually little hair on the abdomen, chest, arms or legs, while in the axillary and pubic areas the hair is often scanty. The administration of testosterone propionate in men in addition to adrenal cortex extract or desoxycorticosterone produces more improvement than specific therapy alone.

Hypopituitarism with Secondary Hypogonadism in Old Men.—In patients with hypopituitarism, notably those with chromophobe adenomas, secondary hypogonadism is usually observed, and this is often associated with secondary hypothyroidism and occasionally with secondary hypofunction of the adrenal cortex. In men with this disorder chorionic gonadotropin or male sex hormone may be an important adjunct to therapy. In older men whose testicular function is waning it may be necessary to use male sex hormone rather than chorionic gonadotropin.

METHOD OF ADMINISTRATION

Three methods of administering the male sex hormone have been employed:

1. Parenteral administration of testosterone propionate in oil. A dose of 25 mg. three times a week by intramuscular injection seems to produce a maximum effect in almost all cases.
2. Oral administration of methyl testosterone in a dose of 30 to 60 mg. daily.
3. The implantation of pellets.

Parenteral administration of testosterone propionate appears to be the method of choice. Oral administration of methyl testosterone produces most of the changes outlined above but is not as effective as parenteral administration. Pellets have not been used extensively, and there are not enough data on their use to warrant definite conclusions.

ABUSES OF THE MALE SEX HORMONE

The male sex hormone is of no value or is contraindicated in the following conditions: (1) sterility; (2) benign prostatic hypertrophy; (3) carcinoma of the prostate; (4) the Fröhlich syndrome with one or both testes in the scrotum; (5) undescended testes unless there is no response or an inadequate response to chorionic gonadotropin; (6) impotence which is not glandular in origin, and (7) old age complicated with arteriosclerotic or hypertensive heart disease.

Sterility.—Heckel [8] has shown that the administration of testosterone propionate in large doses may cause an azoospermia in a man with a normal spermatozoa count. This phenomenon conforms to the general biologic principle that the administration of a hormone secreted by a gland of internal secretion tends to inhibit the gland which produces it. The male sex hormone is therefore not of any value in promoting spermatogenesis in men with sterility. However, it should be pointed out that doses of as much as 25 mg. three times a week by intramuscular injection may not cause this effect. One of our patients with Addison's disease was able to impregnate his wife while receiving this much testosterone propionate.

Benign Prostatic Hypertrophy.—A few years ago it was recommended that the male sex hormone be used in patients with benign prostatic hypertrophy. Since the development of the prostate, in the first place, depends on stimulation by male sex hormone, it is not easy to see why the administration of this material would make the prostate smaller. In actual practice, it does not appear to be especially effective therapy. Some observers have suggested that it is effective not because it has any influence on the prostate but because it improves the tone of the smooth muscle of the bladder.

Carcinoma of the Prostate.—Huggins [9] has recently shown that orchiectomy produces a striking improvement in some patients with carcinoma of the prostate and has suggested that some types of carcinoma of this organ depend for their growth on androgenic stimulation. Improvement has also been observed in such patients subsequent to a functional castration with large doses of diethylstilbestrol, although this procedure is not as effective as orchiectomy. In view of these observations, it would appear unwise to give testosterone propionate to any man with carcinoma of the prostate.

Fröhlich Syndrome and Undescended Testes.—Both these conditions, Fröhlich syndrome and undescended testes, have been described under the uses of the male sex hormone. It should merely be emphasized that since the male sex hormone inhibits the normal testis, it should not be used in any patient in which one or both testes are capable of responding to stimulation.

Old Age Complicated with Arteriosclerotic or Hypertensive Heart Disease.—In old men with coronary sclerosis or hypertension, the administration of male sex hormone may produce enough augmentation of activity to increase the risk of coronary thrombosis, cardiac decompensation or cerebral hemorrhage and is therefore probably undesirable therapy.

CONDITIONS IN WHICH THE VALUE OF MALE SEX HORMONE IS DOUBTFUL

Improvement from male sex hormone has been claimed in the following conditions, although the data are not extensive enough to warrant definite conclusions: (1) angina pectoris; (2) various menstrual disorders in the female including menorrhagia, metrorrhagia and dysmenorrhea; (3) carcinoma of the ovaries, and (4) carcinoma of the breasts.

Angina Pectoris.—Lesser [10] has recently reported definite improvement in about 50 per cent of patients with angina pectoris as the result of administration

8. Heckel, N. J.: The Influence of Testosterone Propionate on Benign Prostatic Hypertrophy and Spermatogenesis: A Clinical and Pathological Study in the Human, J. Urol. **43:** 286 (Feb.) 1940.
9. Huggins, C., and Scott, W. W.: Bilateral Adrenalectomy in Prostatic Cancer: Clinical Features and Urinary Excretion of 17-Ketosteroids and Estrogen, Ann. Surg. **122:** 1031 (Dec.) 1945.
10. Lesser, M. A.: Testosterone Propionate Therapy in One Hundred Cases of Angina Pectoris, J. Clin. Endocrinol. **6:** 549 (Aug.) 1946.

of testosterone propionate. The improvement did not set in until six to eight weeks after the administration of the material was started. It was his impression that the life of patients with this condition was not prolonged, but that the improvement was the result of some change in the cardiac musculature.

It is believed that there is not enough evidence at present to prove conclusively that the male sex hormone is effective against this disease.

Menstrual Disorders.—The use of small amounts of male sex hormone has been recommended in women who show excessive bleeding for various reasons, and in some of them it has been effective. The importance of careful examination of all women with abnormal bleeding to rule out cancer cannot be overemphasized. Some improvement from the use of the male sex hormone has also been claimed in women suffering from dysmenorrhea. It does not take large doses of this material to produce enlargement of the clitoris, development of hair in masculine areas and lowering of the pitch of the voice. It is always questionable in my opinion whether it is justifiable to induce these masculinization effects in women with menstrual disorders.

Carcinoma of the Ovaries and Breasts.—Just as improvement in carcinoma of the prostate has been reported in some men after orchiectomy, improvement in carcinoma of the breast has occasionally been reported after the removal of the ovaries. It has been suggested that functional castration in women might be induced with large doses of male sex hormone and thereby perhaps might inhibit the development of carcinoma of the breast. Adair [11] has just reported that in women with this disorder testosterone propionate given intramuscularly in large doses may induce changes fully as dramatic as those observed in men with carcinoma of the prostate following removal of the testes or functional castration with diethylstilbestrol. The local lesion in the breast and the x-ray evidence of metastasis in bone may virtually disappear. The data are not yet extensive enough to determine just what type of carcinoma of the breast is affected by male sex hormone and whether or not the improvement which has been observed is ever permanent.

It has also been suggested that by inhibiting the ovaries, male sex hormone might have a beneficial influence on carcinoma of the ovaries. There are not enough data on its use in the treatment of this disorder to conclude that it has any beneficial effect.

HARMFUL EFFECTS OF THE MALE SEX HORMONE

The administration of the male sex hormone may produce the following harmful effects: (1) injury to the normal testis with production of azoospermia: recovery from such injury usually follows the cessation of treatment; (2) symptoms of heart failure in old men; (3) pitting edema of the lower legs; (4) acne vulgaris; (5) hypermetabolism (large doses), and (6) hypertrichosis, lowering of the pitch of the voice and enlargement of the clitoris in women.

Pitting edema of the lower legs is usually associated with the administration of excessive doses of male sex hormone and is rarely observed with a dose of 25 mg. of the substance three times a week. The male sex hormone causes retention of nitrogen, water and salt. Some acne usually appears subsequent to its administration but is pronounced only when the dose is excessive.

11. Adair, Frank E.: What's New in Cancer, to be published.

THE MALE CLIMACTERIC

Report of Two Hundred and Seventy-Three Cases

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In previous articles [1] the symptoms characteristic for gonadal afunction and hypofunction in both the human female and the male have been outlined and described. That man is subject to varying degrees of sexual function and does have a climacteric is now an established fact.

GENERAL DESCRIPTION OF THE SYNDROME

The symptoms of this syndrome may be present in any one of several conditions which can occur in man, such as eunuchism, cryptorchism, hypogonadism, castration and the climacteric.

Eunuchism results from complete absence of testicular function in man and the absence of function must be present in the person before and at the time for the occurrence of secondary sexual development. If there is some testicular function at the time of puberty and a degree of secondary sexual development occurs, then the condition must be classified as hypogonadism. Eunuchism may be due to congenital absence of the testicles (a condition of doubtful occurrence) to complete afunction of any testicular tissue which may be present or to castration before the onset of puberty.

Eunuchism is characterized by typical physical and objective characteristics. Epiphyseal union is delayed as a result of the absence of gonadal function, and in the presence of the normal growth hormone of the anterior pituitary gland the long bones continue to grow so that the characteristic eunuchoid physique develops. The lower measurement is longer than the upper, and the span is greater than the height. The pelvis is broad and the shoulders are narrow, as in the woman. The larynx remains small, and the voice is high pitched and feminine. The skin is soft and velvety to the touch and has a pale waxlike appearance. In adult life the facial expression is old and wrinkled and gives an appearance of worry. The body is devoid of coarse hair. There may be a few scattered hair on the pubes,[1] and in the axillas. On the face and chin the hair growth is scattered and fine, and in most instances the patient has not found it necessary to shave. There is an increased deposit of subcutaneous fat which has a tendency to localize in the breasts and over the hips.

The testosterone propionate (Neo-Hombreol) used in this study was provided by Roche-Organon, Inc., Nutley, N. J.

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1. Werner, A. A.: Symptoms Accompanying Ovarian Hypofunction, J. Missouri M. A. **28**: 363-371, 1931; Syndrome Accompanying Deficiency or Absence of the Ovarian Follicular Hormone, Endocrinology **19**: 695-700, 1935. Werner, A. A.; Johns, G. A.; Hoctor, E. F.; Ault, C. C.; Kohler, L. H., and Weis, M. W.: Involutional Melancholia: Probable Etiology and Treatment, J. A. M. A. **103**: 13-16 (July 7) 1934. Werner, A. A.; Ault, C. C.; Hoctor, E. F., and Kohler, L. H.: Involutional Melancholia: Probable Etiology and Treatment, Arch. Neurol & Psychiat. **35**: 1076-1080 (May) 1936. Werner, A. A.; Ault, C. C., and Hoctor, E. F.: Theelin Therapy in the Psychoses, J. A. M. A. **109**: 1786-1788 (Nov. 27) 1937; Involutional Melancholia: Additional Report, Am. J. Psychiat. **97**: 691-694 (Nov.) 1940. Werner, A. A.: Involutional Melancholia: A Review with Additional Cases, Arch. Neurol. & Psychiat. **45**: 944-952 (June) 1941; The Menopause, Am. J. Nursing **42**: 1373-1380 (Dec.) 1942. Werner, A. A., and Collier, W. D.: The Effect of Theelin Injections on the Castrated Woman, Proc. Soc. Exper. Biol. & Med. **29**: 1142-1143, 1932; The Effect of Theelin Injections on the Castrated Woman, with Histologic Report, J. A. M. A. **100**: 633-640 (March 4) 1933. Werner, A. A.: The Male Climacteric, ibid **112**: 1441-1443 (April 15) 1939; The Male Climacteric, in The Merck Report, October 1939, pp. 27-28; The Male Climacteric: Additional Observations of Thirty-Seven Patients, J. Urol. **49**: 872-882 (June) 1943; abstracted, J. Missouri M. A. **40**: 292-293 (Sept.) 1943; The Male Climacteric: Report of Fifty-Four Cases, J. A. M. A. **127**: 705-710 (March 24) 1945; Endocrinology: Clinical Application and Treatment, Philadelphia, Lea & Febiger, 1942.

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buttocks and trochanters. The penis is small and the scrotum is shriveled. Temperamentally, the eunuch is quiet, sluggish and slow to act. He is usually not ambitious or aggressive, may have a normal mentality and may be rather cunning. The subjective symptoms characteristic for hypogonadal function are not as pronounced in eunuchs as they are in other persons who at some time in life have had some degree of gonadal function and then have had a decrease or loss of this function. The symptoms most likely to be present are psychic, such as mental depression, a decrease in memory and in the ability for mental concentration, loss of interest in normal activities, loss of self confidence and unsociability.

Cryptorchism is characterized by a congenital failure of descent of one or both testicles. Unilateral cryptorchism is of little consequence provided the other testicle is situated in the scrotum, is properly developed and has normal function. We are here interested in bilateral cryptorchism. There is clinical evidence that the interstitial cells of the testes may function to some extent in this condition, as evidenced by some degree of secondary genital development and growth of pubic hair. However, spermatogenesis does not occur. Moore [2] proved the thermostatic value of the scrotum for normal function of the testes. He demonstrated that the seminiferous tubules are irregular throughout and that the germinal cells have an irregular appearance if the testicles are allowed to remain in the peritoneal cavity or high up in the inguinal canals.

Cryptorchid persons usually display development of the typical skeletal growth and the mammary, suprapubic and trochanteric adiposity of eunuchs, but they are not so introverted and have less tendency toward depressive symptoms.

Hypogonadism literally implies decreased function of the sexual glands, and it may be primary or secondary. In primary hypogonadism in the male, normally placed testes have never functioned to a normal degree. In secondary hypogonadism the testes apparently have functioned normally for a time and later there has been a decrease in their endocrinous activity. Secondary hypogonadism may occur at any time during the period of actual sexual life of the person and may result from insufficient gonadotropic stimulation from the anterior pituitary or inadequate response of the testes to normal gonadotropic stimulation. The testicles per se may be subject to decreased function succeeding toxic conditions, infections and various other ailments. Hypothyroidism is sometimes responsible for secondary hypogonadism, because the thyroid fails to stimulate normal chemical and cellular activity of all bodily structures, including the endocrine glands.

The hypogonadal patient is subject to any or all symptoms which have been described for the climacteric. It was formerly believed that if a man or woman were not of climacteric age the symptoms were due to some other condition, but this assumption is not correct. Hypogonadism produces a definite syndrome when it occurs during the period of active sexual life regardless of the age of the patient, except that the syndrome is less apt to occur or is apt to be less severe before the age of approximately 25 years.

Complete or partial loss of function of the testes can also occur from any of the following conditions, namely, castration or bilateral orchitis due to any cause, especially that due to mumps or that resulting from bilateral herniotomy if the circulation of the testes is extensively impaired. Roentgenologic radiation of the male genitals in the region of the testes may cause atrophy of these glands if they are not properly protected, and in some instances the testes may be subjected to roentgen rays for therapeutic reasons, as in cancers. If any of these conditions occur after the patient has had normal sexual function, severe endocrinous imbalance will result in the appearance of the symptoms characteristic for the climacteric in a pronounced degree, and these symptoms may persist with varying intensity until the usual time for the person to have a normal endocrinous equilibrium develop, which may be for an indefinite number of years.

Decline of sexual function in man may occur at any age after sexual maturity has developed. The most prevalent time for this decline of gonadal function to occur in man is in later life, approximately from the ages of 45 to 55. Many women do not have serious difficulty at the climacteric, nor do all men, but I am inclined to believe that it would be found that approximately as many men as women experience some degree of endocrinous-autonomic nervous system imbalance and of characteristic symptoms if the syndrome was recognized and if the information was available.

SUBJECTIVE SYMPTOMS

When a man has developed and functioned sexually and then has hypofunction at some later date, the diagnostic evidence for the condition is chiefly subjective rather than objective. The syndrome results from gonad-pituitary imbalance or vice versa (the thyroid and adrenals may be secondarily involved) with disturbance of the autonomic and central nervous systems. The symptoms produced are necessarily chiefly functional, and they have been described and discussed in detail by myself in a number of previously published articles, in which they have been classified as (1) nervous, (2) circulatory and (3) general. Since a correct evaluation of the significance of these symptoms is necessary for diagnosis, and in order that this report may be complete and understandable, a summary of this syndrome will be given.

NERVOUS SYMPTOMS

Most patients described an intense subjective nervousness or a feeling of tension. There is a sensation of inward tremulousness which usually does not become manifest as a tremor. This is especially noticeable on arising during the night or in the morning. Excitement or fatigue accentuates it, and a tremor may then become noticeable which should not be attributed to hyperthyroidism.

Nervous people are irritable, and they are easily aggravated or excited to anger by word or deed. The noises of playing children, the radio, almost anything stirs them to action. In fact they need no special stimulus. They are hard to please, and frequently their family or associates can hardly get along with them.

Excitability is a nervous state in which the persons respond to ordinary stimuli in an exaggerated manner, especially as regards psychic response. Unfavorable news, slight mishaps, arguments and little occurrences that would not disturb a normal person cause them a nervous and mental flurry.

A large majority of these patients complain of sleeping poorly. They may be restless and sleep only for short intervals during the night. Some fall asleep

2. Moore, C. R.: Hormones in Relation to Reproduction, Am. J. Obst. & Gynec. **28**:, 1935.

quickly on retiring only to awake in half an hour and remain awake for varying lengths of time. Others retire but do not fall asleep until after midnight. Some complain that they sleep well until 2 or 3 a. m. and then remain awake until morning. Patients who do not sleep at night find themselves exhausted the next morning and must sleep during the day. This desire to sleep during the daylight hours must not be confused with somnolence.

Numbness and tingling of the hands, feet or one or more of the extremities often occurs. Frequently when these people awaken while lying in bed they find their extremities completely numb. Some have stated that they had to sit up and rub their arms or legs, and one person who awoke and arose to go to the bathroom fell to the floor because the feet were numb. Formication, a sensation as of ants or insects crawling over the skin, especially that on the back and trunk, is a frequent complaint. There may be itching, prickling or tingling of the skin.

Headaches of various types and locations occur but are rarely migrainous. They may be described as a dull to severe ache, usually not neuralgic, and may occur irregularly or be continuous. Their location may be temporal, frontal, vertical or occipital, or any combination of these. There are two types of headaches which have an almost specific diagnostic importance in gonadal hypofunction, namely, the vertical and the occipitocervical. The occipitocervical type may radiate to the neck, over the scapular regions or down the spine. It may last for from hours to several days; when it is present, the patients complain that their minds seem hazy or foggy, and this mental haziness may last for days. The ache in the vertex is frequently described as similar to a great weight resting on the head or as a feeling of pressure.

There is a decrease in memory and in ability for mental concentration. Cerebration is slowed and the patients are forgetful, especially of recent events. If they read an article they cannot recall what they have read and must reread it several times before it registers; names, figures and dates are especially difficult to remember.

Depression or mild melancholia is an important symptom; when this is present the patients experience a loss of interest in their work, in their home or in their formerly pleasurable diversions; they want to avoid people and may cry for no special reason. They realize that there is something wrong within themselves; they become introverts, are ill at ease, fear some impending danger and worry unnecessarily. There is a loss of self confidence and a feeling of futility. At this stage of the syndrome these patients verge on psychosis; they may be self accusatory, may have thoughts of self destruction and may actually commit suicide. This extreme stage has previously been referred to as involutional melancholia; it is a psychosis, but of definitely endocrinous origin, and should be entitled "climacteric psychosis."

CIRCULATORY SYMPTOMS

Hot flushes are characterized by a sudden redness of the face, neck, upper part of the chest and, at times, of most of the body. This is akin to blushing and is due to dilatation of the superficial capillaries of the skin. It is an uncomfortable sensation which is generally of short duration, but it may last an hour or even longer, if the statements of some patients are correct. Frequently it is described as a smothering sensation. Profuse perspiration may accompany the hot flushes. Chilly, creepy sensations occur at times, and these are the counterpart of hot flushes. There may be vertigo and scotomas, or there may be tingling or prickling sensations over the head, neck and body. Occasionally hot flushes may accompany disturbances of the cardiovascular system, especially arteriosclerosis with hypertension, but those so caused can be eliminated by proper diagnosis.

Tachycardia, palpitation and dyspnea which increase with moderate effort without any evident cardiorenal disease are encountered. Walking a short distance, ascending a flight of stairs or almost any moderate effort causes cardiac consciousness. Many patients experience this group of symptoms while sitting quietly or even while lying in bed. At times they are awakened from their sleep by tachycardia and palpitation.

Vertigo, especially on a change of position, is often noticed with no cardiovascular disease to account for it. Vertigo, tinnitus and scotomas are usually associated symptoms; of the three, vertigo occurs most frequently. Scotomas may occur as dark, red or silvery specks floating or dancing before the eyes.

Cold hands and cold feet at any season are experienced by many patients. The pulse rate is usually not greatly affected unless there is some intercurrent disease, and the blood pressure may be increased in an occasional patient, perhaps as the result of nervous tension.

GENERAL SYMPTOMS

Lassitude and fatigability are often present. Some patients state that there is a pronounced decrease in their endurance and that they fatigue easily. Others complain that they are constantly tired or that on arising in the morning they are unrested or feel more tired than when they went to bed.

There are complaints of vague pains whose location may be as legion as the distribution of the nerves. However, when a patient complains of pain, one must make a definite effort to determine its significance before the complaint is lightly dismissed.

Potency is something apart from libido. Potency is more easily determinable in man than in woman for obvious reasons.

Libido operates through the conscious mind and in a large degree depends on the mental reaction, and it may be present in the absence of potency. In many instances the decline or loss of potency and the persistence of libido causes men to consult their physician.

Constipation is frequently observed in hypofunction of the thyroid and pituitary glands in which there is a relative vagotonia. Many patients complain of a gastric syndrome characterized by distention and eructation after meals with no organic lesions. This is probably secondary to the nervousness and constipation and usually disappears with sedation and proper elimination. While some cases of constipation may have a glandular basis, the vast majority are probably due to improper habits and diets, gastrointestinal disease and other conditions.

GENERAL STUDY OF TWO HUNDRED AND SEVENTY-THREE PATIENTS

In this group of patients there were 5 who were eunuchs or cryptorchids, 2 who were castrates, 32 with hypogonadism, 230 having the climacteric syndrome and 4 who had climacteric psychosis. The average

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age of the entire group was 50.5 years. The cryptorchids and those having hypogonadism were younger, with their average age 33.1 years. The average age of the 234 climacteric patients was 53.7 years at the time when they sought consultation, which is not their average age at the onset of their symptoms.

Forty-two of these patients were single, 192 were married, 19 were widowed and 20 were divorced. Twenty-eight per cent of these men were overweight, while in a group of 197 women having similar disturbances, 34 per cent were obese. With few exceptions, the basal metabolic rate was within normal limits; there were some low basal rates, but no patient had hyperthyroidism. That these symptoms are not due to hypothyroidism is evidenced by clinical experience and by the fact that these symptoms are not relieved by medication with thyroid.

There were 27 patients whose blood pressure could be classified as hypertensive. The criterion for normal blood pressure in this instance was arbitrarily set for patients of this age and condition at systolic 140 to 150 and diastolic 90 mm. of mercury (accepted normal, 135 systolic and 80 diastolic). The diastolic pressure in most patients was around 80, which gives evidence for the elasticity of the blood vessels. It must be remembered that 90.5 per cent of these patients were subjectively nervous, had other subjective symptoms

TABLE 1.—*Frequency of Circulatory Symptoms in the Male Climacteric*

	%
Hot flushes	29.3
Chilly sensations	6.2
Sweating	17.9
Vertigo	46.5
Scotomas	26.0
Tinnitus	10.6
Numbness and tingling	43.9
Cold hands and feet	22.9
Tachycardia, palpitation and dyspnea	51.2

and were undergoing an examination, all of which factors may influence blood pressure. It has been my experience that many patients who have a moderate elevation in blood pressure when examined at the climacteric have it fall to normal under treatment.

It is interesting to note the size of the prostate in 210 patients in whom this information was obtained by palpation. Arbitrarily the classification I have used is as follows: (1) Normal size and consistency; (2) 1 plus, in which an appreciable increase in size and consistency was found; (3) 2 plus, in which the prostate was approximately twice normal size, and (4) 3 plus, in which the prostate was more than twice normal size. In these 210 patients the prostate was normal in size in 81, or 38.57 per cent and increased in size in 129, or 61.43 per cent. The increase in size was 1 plus in 57, or 27.14 per cent; 2 plus in 48, or 22.86 per cent and 3 plus in 24, or 11.43 per cent.

In all cases of enlargement of the prostate the consistency was increased; in the great majority of cases the surface was smooth and there was a remarkable absence of tenderness to pressure. Few of the patients complained of urinary symptoms or had any knowledge that the prostate was hypertrophied.

Eighty and five tenths per cent of the patients admitted decreased or absent libido, while 19.5 per cent did not. The potency of 90.1 per cent was decidedly decreased or absent, while 9.9 per cent thought that they were quite all right. Tables 1, 2, 3 and 4 give complete information on the symptomatology of this syndrome.

REPORT OF CASES

Eunuchism is the subject of the following case report. Literally, a eunuch is a man who has been castrated in childhood before secondary sexual development has

TABLE 2.—*Frequency of Nervous Symptoms in the Male Climacteric*

	%
Nervousness, subjective	90.5
Irritability	80.2
Excitability	49.0
Depression	77.2
Crying	15.3
Memory and concentration decreased	75.8
Loss of interest	55.8
Decrease in self confidence	27.1
Ill at ease	56.4
Fear of impending danger	40.6
Worry, unnecessary	33.7
Personality change, unsociable, desire to avoid crowds and company	23.8
Self accusatory	2.4
Feeling of futility	27.1
Thoughts of self destruction	7.4
Suicide attempted (2 persons)	
Psychoses (9 patients)	2.4
Sleep disturbed	50.3
Occipitocervical aching	41.9
Vertex pressure	17.5
Headache	31.8
Itching	31.8
Formication	20.5

been initiated. However, an adult whose testes have never functioned and who has never had any evidence of initiation of secondary sexual development is just as much a eunuch as is a man who was castrated in childhood.

CASE 1.—*History.*—J. F., an unmarried man aged 45, had no secondary sexual development. He was subjectively extremely nervous, irritable and excitable. He was depressed

TABLE 3.—*Frequency of General Symptoms and Signs in the Male Climacteric*

	%
Fatigability and lassitude	80.2
Libido (data on 252 patients)	
Decreased or absent	
Yes	80.5
No	19.5
Potency (data on 263 patients)	
Decreased or absent	
Yes	90.1
No	9.9
Vague pains	32.9
Constipation	24.9
Obesity (moderate)	21.5
Social status:	
Single	42
Married	192
Widowed	19
Divorced	20
	Years
Average age of all patients	50.5
Average age of climacteric patients	53.7
Average age of hypogonadal cryptorchidic and eunuchoid patients	33.1

and cried frequently, had a decrease in memory and in concentration with regard to recent events, was ill at ease, had a fear of impending danger, worried for no good reason and had lost interest in all his activities, and it was an effort for him to continue his work as a bookkeeper. He complained of occipitocervical aching which would occur about twice a month and last two or three days. He would have a retro-orbital ache and sensation of pressure and a unilateral temporal ache about twice a month, which might occur on either side without evidence of being migrainous. He fatigued easily and had cold hands and cold feet, numbness and tingling in the extremities

and hot flushes at irregular intervals. He slept poorly and would lie awake for hours.

Examination.—The patient's height was 70 inches (178 cm.), and his skeletal growth was eunuchoid. The lower measurement was 6 inches (15 cm.) more than the upper. His weight in the nude was 154 pounds (70 Kg.). His facial expression was pinched and unhappy; the skin of the face and body was soft and finely wrinkled and had a pale, pasty, waxlike appearance. He had never found it necessary to shave. The hair of the face was lanugal; there was no growth of hair in the axillary or genital area. The penis was infantile and the scrotum small and wrinkled. No testes could be palpated. There was moderate mammary, suprapubic and trochanteric adiposity.

The thyroid was moderately enlarged, and the surface was smooth. The heart was normal, the pulse rate was 80 and the blood pressure was 100 systolic and 80 diastolic.

TABLE 4.—*The Male Climacteric Syndrome: Order of Frequency of Symptoms in Two Hundred and Seventy-Three Patients*

	%
1. Nervousness, subjective	90.5
2. Potency decreased or absent	90.1
3. Libido decreased or absent	80.5
4. Irritability	80.2
5. Fatigability and lassitude	80.2
6. Depression	77.2
7. Memory and concentration decreased	75.8
8. Sleep disturbed	59.3
9. Loss of interest	58.5
10. Ill at ease	56.4
11. Tachycardia, palpitation and dyspnea	51.2
12. Excitability	49.0
13. Vertigo	46.5
14. Numbness and tingling	43.9
15. Occipitocervical aching	41.9
16. Fear	40.6
17. Worry, unnecessary	33.7
18. Cold hands and feet	32.9
19. Vague pains	32.9
20. Headache	31.8
21. Itching	31.8
22. Hot flushes	29.3
23. Loss of self confidence	27.1
24. Futility	27.1
25. Scotomas	26.0
26. Constipation	24.9
27. Unsociability	23.8
28. Obesity	21.5
29. Aching in the vertex	17.5
30. Sweating	17.9
31. Crying	15.3
32. Tinnitus	10.6
33. Thoughts of self destruction	7.4
34. Chilly sensations	6.2
35. Self accusations	2.4
36. Psychosis	2.4
37. Suicide attempted (2 patients)	

Examination of the blood revealed that the hemoglobin content, the number of red and white cells and the differential picture were normal. The urinalysis was negative. The nonprotein nitrogen of the blood measured 30 mg., the fasting blood sugar 110 mg. per hundred cubic centimeters. The Kahn test was negative. The basal metabolic rate was — 10 per cent.

Treatment.—The patient was given six 10 mg. tablets of testosterone propionate orally each day, for he did not want his doctor at home to know about his treatment. In one month he felt better. At the end of two months he was much improved symptomatically; he was more vigorous and less tired, and the mental depression and the allied symptoms were relieved. His skin became pink, and his facial expression and dejected manner changed to cheerfulness, with increased ambition for the future. His voice became more masculine. After taking this medicament for six weeks an acneform eruption developed about his face and back as it does in young boys at puberty, and this eruption receded when the testosterone was discontinued.

The next report is that of a patient who had cryptorchism when he consulted me.

CASE 2.—*History.*—The patient was aged 33. At the age of 3 a left orchiopexy was performed and at the time of examination this testicle was in the upper part of the left scrotum just outside of the left external inguinal ring; it was the size of a small olive and was soft and structureless. At the age of 19 a right orchiopexy was performed, but this testicle could not be palpated. The penis was small, the scrotum shriveled, and only a few scattered hairs were present in the genital region. This patient sought consultation because he was embarrassed about his general appearance and lack of secondary sexual development. He had had juvenile and adult obesity, which in recent years had shown accentuation of the hypogonadal type characterized by mammary, suprapubic and trochanteric adiposity. There was only lanugal hair on the face, and it had not been necessary to shave. The skin was soft and of fine texture. Since the patient had never had any secondary sexual development and consequently had no testicular (testosterone) stimulation, he did not have any symptoms except that he was physically sluggish.

Examination.—The patient's height was 70 inches (178 cm.) and his weight in the nude was 219 pounds (99 Kg.). The pulse rate was 72, and the blood pressure was 130 systolic and 95 diastolic. The results of his laboratory tests were all within normal limits, and his basal metabolic rate was + 5 per cent.

Treatment.—This patient was given 1,000 rat units of chorionic gonadotropin intramuscularly three times each week to determine whether it would be possible to stimulate development of the left testicle. After the fourth injection the left testicle was firmer and the size of a large olive and felt tender and itchy. After the twentieth injection the testicle was more firm, there was a definite increase in the growth of pubic hair, the penis became larger and the patient felt more vigorous.

After the patient had had forty-one injections of 1,000 rat units of chorionic gonadotropin over a period of three months, it was decided to change the treatment to injections of 25 mg. of testosterone propionate given every other day, omitting Sunday. Twelve hours after the first injection of testosterone the patient stated that he felt an upsurge in vigor, a sensation that he had never experienced before. After the second injection he began to have erections which lasted one to two hours four or five times a day, and an acneform eruption developed on his face. After the fourth injection he stated that priapism had developed, and the amount of testosterone propionate per injection was decreased from 25 to 10 mg. After five injections of 10 mg. each the patient noticed an appreciable decrease in stimulation and asked to be given the 25 mg. doses. For the above reasons the doses were increased and decreased from 10 to 25 mg. at different times, and each time the patient would notice an increase or decrease in the desired stimulation within a few days. Because of the acneform eruption about the face and back the administration of the drug was discontinued for twenty days, and the acne disappeared and reappeared again with treatment, indicating that the male hormone is the etiologic factor in the acne of some persons. This also occurred in the first patient (case 1). The penis is practically normal in size and there is a heavy growth of pubic hair; he must shave and he has lost most of his mammary, suprapubic and trochanteric obesity. This patient reverts to his original condition if he does not receive testosterone propionate.

The following report is that of a case of hypogonadism.

CASE 3.—*History.*—J. W., a single man aged 35, developed normally both physically and sexually during puberty and adolescence. Since the age of 27 he has noticed a gradual decrease in libido and potency, which is definite at the present time. He is subjectively nervous, irritable and excitable, feels depressed, has a decrease in memory and concentration, is ill at ease, fears impending danger, has lost interest in all activities and does not care for company. He has hot flushes and chilly sensations frequently. There is vertigo with change of position, scotomas apparent as dark spots and tinnitus

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heard as a whirring sound. He has occipitocervical aching which radiates to the neck, pressure in the vertex and retro-orbital aching at times. He has tachycardia, palpitation and dyspnea on moderate effort and even while lying in bed at times. He fatigues easily and arises in the morning unrested. There is numbness and tingling of the extremities, even while lying in bed, and definite generalized itching and formication. He sleeps poorly and lies awake much.

Examination.—The height of the patient is 67 inches (170 cm.), and his weight is 149 pounds (67.6 Kg.). He is the physically strong and sexual type; square and stocky, all measurements being equal, with a heavy growth of hair on the genitals, axillas, chest, abdomen and extremities. He is physically normal, the pulse rate is 60, and the blood pressure is 115 systolic and 80 diastolic. The prostate is normal to palpation.

Examination of the blood revealed that the hemoglobin, red and white cells and the differential count were within normal limits. Urinalysis was negative. The nonprotein nitrogen of the blood was 16 mg. and the sugar was 95.8 mg. per hundred cubic centimeters. The Kahn test gave negative results. The basal metabolic rate was — 3 per cent, — 5 per cent.

Treatment.—The patient was given intramuscular injections of 25 mg. testosterone propionate every other day, omitting Sunday. After six injections he was much improved and stated that he felt fine. Treatment was continued for three months.

The diagnosis in the following case was the male climacteric:

CASE 4.—*History.*—J. R. was a married man aged 53. For the past two years he had noticed a definite decrease in libido and potency and extreme subjective nervousness, so much so that he would feel numb, nauseated and unable to concentrate. About eighteen months ago when he awakened one night he had numbness, was extremely nervous, became frightened and had profuse perspiration. This lasted ten or fifteen minutes and recurred three times that night. (This is a common happening for people in the climacteric and is a combination of a hot flush, fear, tachycardia and palpitation on awakening.) When the patient consulted me he had had this condition for approximately two years. He was subjectively extremely nervous, irritable and excitable, was depressed and cried and had decreased ability for memory and concentration. His mind seemed hazy, he was ill at ease and he feared impending danger. He had lost confidence in himself and interest in everything; he wanted to be alone, did not care for company and had a feeling of frustration, for no real reason except his state of endocrine-autonomic imbalance. He verged on climacteric psychosis. He fatigued easily and arose unrested in the morning, had vertigo with change of position, scotomas seen as scintillating rings and tinnitus sounding as if steam were escaping. He had occipitocervical and vertical aching with a sensation of retro-orbital pulling or pushing. At times he also had a feeling as if a tight band were around his head, and then again his head would feel too full. There was tachycardia, palpitation and dyspnea on moderate effort, numbness and tingling of the extremities especially while he was lying in bed, generalized itching, formication and cold hands and feet. At times he would have vague pains, and he lost 15 pounds (7 Kg.) in two years.

Examination.—The height of the patient was 64 inches (163 cm.) and his weight was 157 pounds (71 Kg.) in the nude. The pulse rate was 78, and the blood pressure was 160 systolic and 90 diastolic. The prostate was moderately enlarged and firm but gave the patient no symptoms. There were no other abnormal physical observations.

Examination of the blood revealed that the hemoglobin, red and white cells and the differential count were all within normal limits. Urinalysis, Wassermann and Kahn tests were negative. The basal metabolic rate was + 7 per cent and + 4 per cent.

Treatment.—The patient was given intramuscular injections of 25 mg. testosterone propionate every other day, omitting Sunday. At the end of one month he felt much better, and he recovered later.

In the following case the patient had climacteric psychosis.

CASE 5.—*History.*—J. K. was a married man aged 49. For the past three years he had noticed a decrease in libido and potency. He was subjectively very nervous, irritable and excitable. He was depressed and cried whenever any one tried to talk to him. He had hot flushes frequently. There was a decrease in memory and in ability for mental concentration; he was decidedly ill at ease, and he had a fear of impending danger and worried very much. There was a loss of interest in everything and a loss of self confidence. He disliked company and crowds and wanted to be alone. There was a feeling of frustration, and on several occasions he thought of committing suicide. He had vertigo with change of position and scotomas appearing as black threads before his eyes. There was occipitocervical and retro-orbital aching. He was always fatigued and would arise unrested in the morning. He had tachycardia, palpitation and dyspnea on light effort, and he would be awakened during the night by tachycardia and palpitation. There was numbness and tingling of the fingers, and his hands and fingers felt swollen. He also had generalized itching at times. He slept poorly and awoke early in the morning. There had been a lumbosacral backache at times during the last four years.

Physical Examination.—His height was 71 inches (185 cm.); his weight in the nude was 151 pounds (68.5 Kg.). The patient had been overweight as a child. The heart was normal, the pulse rate was 85 while he was lying down, and the blood pressure was 135 systolic and 80 diastolic. The genitals were normal, and the prostate was only slightly increased in size and consistency.

Laboratory examination of the blood revealed that the hemoglobin, red and white cells and the differential count were all within normal limits. Urinalysis was negative. The nonprotein nitrogen in the blood was 35 mg. and the fasting value of the blood sugar was 85 mg. per hundred cubic centimeters. The Kahn test was negative, the cholesterol level of the blood was 160 mg. per hundred cubic centimeters, and the basal metabolic rate was + 10 per cent.

Treatment.—The patient was given intramuscular injections of 25 mg. testosterone propionate every other day, plus a mild sedative four times a day. At the present time he has been treated for two months and has shown some improvement. He will need more treatment.

TREATMENT

Testosterone propionate may be administered by intramuscular injection in 5, 10 and 25 mg. per cubic centimeter in an oily solution. The 25 mg. dosage is the most effective. For the first month or two the injections should be given every other day, omitting Sunday. After the symptoms of hypogonadism or of the climacteric have been relieved for some time, it is well to continue the injections at intervals of twice a week for one month, and then such injections given once a week may be sufficient to keep the symptoms under control. The climacteric syndrome varies in duration in different persons; it may last for from six months to five or six years or longer in some patients whom it will be necessary to treat again when the symptoms reappear after the cessation of treatment. The only criterion that we have to determine that the patient has developed endocrinous stability is that the symptoms do not return after cessation of treatment. Solutions in oil have a tendency to leak from the injection site and to prevent this a piece of adhesive tape 1 by 1 inch square should be applied immediately, and the patient should be instructed to remove the tape the next morning.

Testosterone may be administered orally in two ways, namely, for ingestion and sublingually for absorption from the floor of the oral cavity.

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The ideal and most effective method of giving the drug is intramuscularly, and the injection site of choice is the upper gluteal region, where there are large muscles and the patient will not be disturbed when he is seated; should tenderness develop at any time, this is a much better location than the upper arms, which are being used constantly.

Of 181 patients whose treatment is on record, 177 received intramuscular injections of 25 mg. testosterone propionate every other day and 4 received six to eight 10 mg. testosterone tablets orally every day. Of the 177 patients who received injections, 173 were benefited and 4 did not believe that they were helped. Of 4 patients who took tablets orally, 3 were much improved and 1 was slightly relieved.

COMMENT

This report represents a study of the symptoms of 273 men patients, each of whom had one of the types of testicular afunction or hypofunction which is, or can be, the etiologic factor in producing the hypogonadal or climacteric syndrome. Two hundred and thirty of these patients were in the climacteric. The great majority of them volunteered the information that libido and potency were decreased or absent, but this condition, except in a few cases, was not their chief concern. They were more interested in having relief from their symptoms, especially those which were nervous and psychic. One can almost surely promise a climacteric patient relief from his symptoms and a feeling of well-being, but a return of libido and potency in patients of this age must not be promised, for it rarely occurs. A reasonable explanation for this failure of resurgence of libido and potency in these older patients is that all machines, animals and men deteriorate with age and use, and all parts, organs and tissues enter into this degeneration and loss of responsiveness. One must remember that the objective in this treatment, which is substitutive, is to assist in establishing endocrine–autonomic nervous system balance for the relief of symptoms and not to stimulate tissues which are incapable of response.

It will be noted that the patient in case 2 had an excessive increase in libido and potency from injections of 25 mg. testosterone propionate, but it must be remembered that this patient was 33 years old, was cryptorchid and had never had any secondary sexual development; his tissues, organs and glands had the responsiveness of youth. It has been my experience that younger eunuchoid, cryptorchidic and hypogonadal men frequently do have some stimulation of potency, but this is because of the factors which have been described.

I have treated great numbers of climacteric women with estrogens for the relief of their subjective symptoms, but rarely have any of them stated that they had noticed sexual stimulation. Women of the climacteric age have no more potency than have men of the same age; the seeming difference is one of anatomic structure.

Menstruation is the end result of a periodic preparation of the uterine mucosa to receive a fertilized egg for propagation of the species and obviously is not necessary in the man. Menstruation is not a necessary occurrence for a sense of well-being in the woman; if her uterus has been removed and her ovarian function has not been disturbed, she will not menstruate but can and will feel perfectly normal until the climacteric is reached. The disturbance of menstruation in women is only visible evidence of ovarian dysfunction which may arise from various causes. When these facts are recognized the similarity of the hypogonadal and climacteric syndrome for both sexes can be understood.

CONCLUSIONS

1. Men are subject to the hypogonadal or climacteric syndrome, just as are women, when there is decrease of function or afunction of the sexual glands.

2. Testosterone propionate is as effective in relieving the subjective symptoms of this syndrome in men as estrogen is in relieving the symptoms of similar origin in women.

3. Sex hormones should not be administered to men and women of climacteric age with the idea of stimulating increased sexual potency; if this is the object of treatment, disappointment will result in the great majority of instances.

ABSTRACT OF DISCUSSION

DR. VICTOR LESPINASSE, Chicago: On a man aged 50 with a carcinoma of the penis I did a complete removal of the penis and a double castration. Postoperatively he had the exact counterpart of the female climacteric. He had the flushes, the flashes, the sweatings and everything that goes with a normal menopause. That was years ago before we had the pure hormones that we have today. Nutrition is both general and local, and in a good many instances failures of local testicular nutrition occur. I believe that many glandular troubles are fundamentally failures of local nutrition. I am sure it is so in the testicle. When one considers that the blood supply of the testicle is a poor hydraulic arrangement, with the long spermatic artery, the long spermatic veins and the straight lift from the testicle clear up to the renal vein on the left side and almost as far on the right side, one can see that circulation through the testicle at best is none too good. One of the procedures that I have devised to try to increase the local circulation, hence nutrition, hence function of the testicle was to join the veins of the testicle to the veins of the leg. So the testicular circulation is augmented by the contraction of the thigh muscles. The men that I see are mostly interested in sex. They come for impotence. They don't lose their libido. The libido is there or plus but their ability to perform is minus, so that the problem is to increase the testicular function. Testosterone works occasionally with a fair result. Testosterone, as Dr. Werner said in connection with his cases, is a general body stimulant. The adult man is stronger than the adolescent boy, and when the testosterone secretion disappears or diminishes the general muscular tone diminishes. That is beautifully shown in the eunuchoid individual. Put them on testosterone and they come around and tell you they are much stronger and they can do more work and now they have libido as well.

DR. AUGUST A. WERNER, St. Louis: Dr. Lespinasse stated that the male climacteric is probably due to failure of nutrition in the testicles because of some disturbance of the blood supply to the testicles. I doubt that this is the condition that occurs. It is inherent for both the man and the woman to have a decline in sex function, especially in later life, characterized by a failure of gonadal response to the gonadal hormone of the anterior pituitary, and this inherent failure of response is the condition that initiates the interglandular disturbance, with a consequent autonomic nervous system imbalance and the production of the symptoms described. Dr. Lespinasse also remarked that libido and potency are stimulated. It has not been my experience that this occurs, except in exceptional cases. These people feel very uncomfortable, even miserable, because of the subjective symptoms. Testosterone will relieve these symptoms and make the patient feel well, and this is the chief and most desirable object of this treatment. As stated in the original paper, cryptorchids and patients who have never had any natural stimulation do experience increase in libido and potency from injections of testosterone.

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STREPTOMYCIN TREATMENT IN TULAREMIA

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From recent laboratory studies it is apparent that streptomycin exerts a strong bacteriostatic and bactericidal action on Pasteurella tularensis (commonly known as Bacterium tularense) in vivo [1] as well as in vitro.[2] One report [3] has appeared suggesting that this antibiotic is effective against tularemia in human beings. The 7 cases reported here resulted from a laboratory acquired infection with Past. tularensis. The Schu strain [4] was the one in widest use in the laboratory and was maintained at maximum virulence by frequent passage through mice and rabbits. Four patients (group I) were treated with streptomycin in the early stage of illness, and 3 (group II) were treated late in convalescence. All received the Foshay tularemia vaccine [5] at some time prior to their illness, which may have been modified thereby. These cases are to be included in another report [6] dealing with vaccine prophylaxis for tularemia.

CLINICAL MATERIAL

This group of persons had been engaged in laboratory work with Past. tularensis for 1.5 to 9 months (average 4.9 months) before contracting the disease. In 2 patients tularemic pneumonia developed; 4 patients had typhoidal tularemia without demonstrable visceral lesions, and 1 patient had a mild ulceroglandular infection.

TREATMENT

The data pertinent to streptomycin treatment in these cases are given in the accompanying table.

(*a*) *Administration and Dosage.*—The streptomycin used represented five lots produced by Merck and Company, the potency varying from 220 to 389 units per milligram of dry material. All lots had passed tests for sterility and pyrogens. For administration, the dried material was dissolved in 2 per cent procaine hydrochloride (for local anesthetic effect) and given at three hour intervals day and night. Doses of 30,000 units to 100,000 units in volumes of 1 to 3 cc. were injected either subcutaneously or intramuscularly. Adequate levels of the drug in the blood were established and maintained equally well by both routes.

(*b*) *Blood Levels and Drug Excretion.*—The dosage for all these patients was determined in a somewhat arbitrary fashion but was aimed at establishing and maintaining hematic levels above that known to be bactericidal for Past. tularensis in vitro [2] (0.4 unit for 5 million organisms per cubic centimeter of broth). This was accomplished with ample margin in all patients.

Blood levels were determined by the method of Forgacs, Kornegay and Henley [7] every day for the first two or three days and every other day thereafter during the period of treatment in each case. Determination of the daily urinary excretion of streptomycin was made in 4 cases and continued after the cessation of therapy until the urine contained 1 unit or less per cubic centimeter. In case 5 the urinary streptomycin level of the patient was determined for only three days after the end of treatment. No excretion studies were carried out in case 3. These results are incorporated in a more detailed report by Kornegay and his co-workers.[8] It is worthy of mention, however, that in 2 cases (2 and 4) the total urinary output of streptomycin approached 100 per cent of the total dose administered parenterally. In cases 1, 6 and 7 the total excretion was less than 50 per cent of the total dosage. There is at present no explanation for this discrepancy.

Streptomycin Therapy in Seven Cases of Tularemia

Case	Stage at Which Treated (Days after Onset)	Total Dose (Units)	Blood Levels (Units per Cc.) During Administration		Per Cent of Total Dose Recovered from Urine
			Mean	Extremes	
	Group I.—Treated in Acute Stage				
1 Typhoidal	3d through 9th day	5,800,000	3	1-4	22*
2 Pneumonic	22d through 28th day	5,600,000	4	1-9	100*
3 Typhoidal	11th through 16th day	1,440,000	2	1-2	Not determined
4 Ulcero-glandular	7th through 14th day	5,800,000	4	1-5	91*
	Group II.—Treated Late in Convalescence				
5 Pneumonic	334th through 338th day	2,700,000	7	2-7	21†
6 Typhoidal	156th through 163d day	5,600,000	5	2-12	41*
7 Typhoidal	73d through 80th day	5,600,000	4	2-10	40‡

* Studies continued after end of treatment until urine contained less than 1 unit per cubic centimeter.
† Studies discontinued three days after end of treatment.
‡ Urine contained 7 units per cc. fourteen days after end of treatment when studies were discontinued.

(*c*) *Other Laboratory Studies.*—Determination of the levels in the blood of nonprotein nitrogen, total protein, total lipids and cholesterol and of the icteric index, van den Bergh reaction and sugar, made for each patient before and after streptomycin therapy, showed no variation from the normal at any time. The urinary phenolsulfonphthalein excretion of all patients was found to be within normal limits before and after treatment. In addition, daily urinalysis, red and white blood cell counts, white blood cell differential counts and hemoglobin determinations during the period of treatment showed no variation from the previously established picture, which in most cases was normal.

From the Station Hospital, Camp Detrick, Frederick, Md.

Roentgenograms were reviewed by Lieut. Col. A. O. Hampton, M. C., A. U. S., Walter Reed General Hospital. Capt. R. A. West, Sn. C., A. U. S., and 1st Lieut. F. M. Schabel, Sn. C., A. U. S., were responsible for much of the laboratory work. Capt. W. L. Gruber, M. C., A. U. S., contributed to the care and management of the patients.

1. Chapman, S. S.; Coriell, L. L.; Kowal, S. F.; Nelson, W., and Downs, C. M.: Studies on Streptomycin Therapy of Experimental Tularemia in White Mice, to be published. Heilman, F. R.: Streptomycin in the Treatment of Experimental Tularemia, Proc. Staff Meet., Mayo Clin. **19:** 553 (Nov. 29) 1944.

2. Chapman, S. S.; Downs, C. M., and Kowal, S. F.: Studies on the Bacteriostatic and Bactericidal Action of Streptomycin on Bacterium Tularense, to be published.

3. Foshay, L., and Pasternack, A. B.: Streptomycin Treatment of Tularemia, J. A. M. A. **130:** 393 (Feb. 16) 1946.

4. The Schu strain of bacteria was obtained from Dr. Lee Foshay.

5. The vaccine together with specifications for its production was supplied by Dr. Lee Foshay.

6. Kadull, P. J.; Reames, H.; Coriell, L. L., and Foshay, L.: Studies on Vaccine Prophylaxis for Tularemia in Man, to be published.

7. Forgacs, J.; Kornegay, G. B., and Henley, T. F.: Studies on Streptomycin: I. Assay in Body Fluids, J. Lab. & Clin. Med. **31:** 514 (May) 1946.

8. Kornegay, G. B.; Forgacs, J., and Henley, T. F.: Studies on Streptomycin: II. Blood Levels and Urinary Excretion in Man and Animals, J. Lab. & Clin. Med. **31:** 523 (May) 1946.

REPORT OF CASES

GROUP I.—*Group 1 consists of 4 who received adequate streptomycin therapy during the acute stage of their disease. Definite response to therapy was observed in the first 2 cases and equivocal response occurred in cases 3 and 4.*

CASE 1.—*Acute, moderately severe typhoidal tularemia, promptly treated with streptomycin with dramatic response.*

F. A. N., a man aged 29, a laboratory technician, had been working with Past. tularensis for eight months prior to admission to the hospital on Sept. 1, 1945. He had received immunization thirteen weeks previously. The onset of illness on the day of admission had been sudden, with fever, chills, extreme fatigue, generalized muscular pains, slight nausea and headache. Physical examination was unremarkable except for a temperature of 102 F., moderate prostration and profuse perspiration. A roentgenogram of the chest disclosed normal conditions. No organisms were isolated from blood or sputum at any time.

During the first forty-eight hours of his hospital stay the patient's temperature rose to 103 F. The administration of streptomycin was begun within twenty-four hours after admission, and he received a total of 5,800,000 units from the second through the ninth hospital day in doses of 100,000 units every three hours. During the third day the temperature fell precipitously to 99 F., and he observed appreciable subjective improvement. By the eighth hospital day the temperature was normal, and the patient had no symptoms. His serum

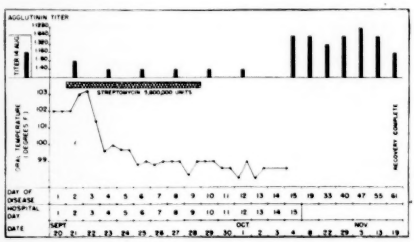

Fig. 1 (case 1).—Effect of streptomycin therapy on serum agglutinin titer and on temperature.

agglutinin titer, which prior to his illness had remained almost constantly at 1:320, fell to 1:40 during the acute febrile stage and by the end of two weeks had again risen to 1:640 (fig. 1). His titer was well maintained thereafter, and he was discharged on the fourteenth hospital day. After three weeks of convalescence the patient was able to resume his work.

CASE 2.—*Acute tularemic pneumonia; treatment with streptomycin while pulmonary infiltration was maximal resulted in prompt response and rapid recovery.*

M. P. C., a woman aged 35, a bacteriologist, had been handling Past. tularensis for six weeks prior to her admission to the hospital on May 13, 1945, after two weeks of increasing discomfort due to a dry cough and malaise and after twenty-four hours had passed since the onset of chills, fever, headache and pain in the chest. She had received immunization nine weeks earlier.

Significant physical observations on admission were a temperature of 103 F., moderate exhaustion, a nonproductive cough and fine, crepitant rales over the left side of the chest posterolaterally. A roentgenogram of the chest made during the first twenty-four hours of hospitalization disclosed moderately extensive infiltration in the left lung field. On the second hospital day, some clear mucoid sputum was raised from which Past. tularensis was isolated by guinea pig inoculation. During the first nine hospital days the pulmonary lesion increased in size, and it reached its maximum extent on the twenty-first day of disease (fig. 2). At this time treatment with streptomycin was started. She was given 100,000 units every three hours for a total dosage of 5,600,000 units. Within eight hours after the initiation of treatment dramatic subjective improvement was observed, and within twenty-four hours the temperature returned to normal. Throughout the week of treatment her only symptom was slight residual pain in the chest on coughing. By the end of the third week of hospitalization she was entirely asymptomatic and there had been no recurrence of fever. The pulmonary lesion, however, was still visible by roentgen ray at the end of one month and the first clear film was obtained on the thirty-eighth hospital day, fifty-one days after the onset of disease (fig. 3). The changes in agglutinin titers are given in figure 4. Within three months of the onset of disease this patient was back at work with only slight residual fatigability.

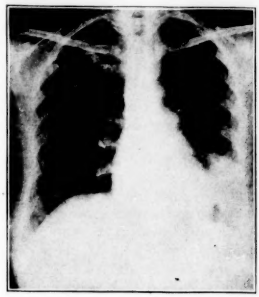

Fig. 2 (case 2).—Maximum extent of pulmonary lesion, twenty-first day after the onset of symptoms.

CASE 3.—*Acute typhoidal tularemia treated with streptomycin as acute illness was subsiding, with equivocal response.*

A. L. D., a woman aged 30, a laboratory technician, had been handling Past. tularensis for two months prior to admission to the hospital on April 29, 1945. Approximately two weeks before admission she had started to do intensive work with the organism, principally the plating and centrifugation of suspensions. Two days prior to admission she observed the sudden onset of fatigue, malaise, weakness, substernal pain, nausea and headache. Physical examination was unremarkable except for a temperature of 104 F. and extreme exhaustion. A roentgenogram of the chest revealed normal conditions. During the first three days she was severely ill, with an irregular spiking temperature chart which showed a gradual downward trend. On the fourth day she was subjectively much improved, and the temperature during the ensuing five days returned to normal. On the eleventh day she was started on a course of streptomycin therapy, receiving 30,000 units every three hours for a total of 1,440,000 units from the eighth through the thirteenth hospital day. She was afebrile after the first day of treatment. The serum agglutinin titer for Past. tularensis had been 1:320 prior to admission and dropped to 1:80 during the acute febrile stage. By the twenty-fifth day after the onset of her disease the titer had risen to 1:320, and by the thirty-ninth day to 1:1280 (fig. 5). It remained significantly elevated. She was discharged, afebrile and virtually asymptomatic, on the twenty-second hospital day.

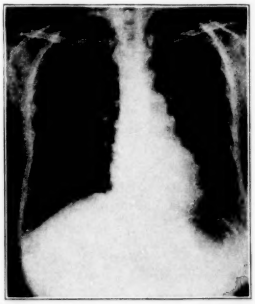

Fig. 3 (case 2).—Roentgenograms fifty-one days after the onset of symptoms; pulmonary lesion cleared.

CASE 4.—*Mild ulceroglandular tularemia treated with streptomycin as lesion and minimal regional lymphadenitis were subsiding, complicated by reaction to the drug.*

M. L. N., a woman aged 24, a laboratory assistant, had worked for nine months in the sterilization and preparation

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room in which work with Past. tularensis was in progress. She had received her last immunization two weeks previously.

She was admitted to the hospital on Sept. 1, 1945 because of a small ulcer on the dorsal surface of the third phalanx of the right middle finger. She had first noticed a small red papule five days before admission, and two days before admission she had lanced it with a sterile needle. During the forty-eight hours prior to admission the finger had become tender, and she had noticed pain in her right axilla. She had no systemic symptoms prior to admission. Physical examination revealed a 4 mm. area of ulceration covered by a thin crust on the dorsal surface of the third phalanx of the right middle finger and surrounded by slight swelling, induration and tenderness; the whole lesion measured approximately 2 cm. in diameter. There was in addition definite tenderness in the right axilla, and a small, freely movable lymph node was palpable. There was no other regional lymphadenopathy. Past. tularensis was recovered from the lesion on the first hospital day. Daily guinea pig inoculation and culture from the lesion on and after the second day were negative. The patient was afebrile prior to streptomycin therapy on the third day, by which time the minimal axillary lymphadenitis had subsided. She received 5,800,000 units of the drug from the third through the tenth hospital day, on a dosage of 100,000 units given subcutaneously every three hours. On the fourth hospital day, the second day of therapy, there occurred the first elevation in temperature to 100 F., which was observed on each succeeding day. On the tenth hospital day, the last day of therapy,

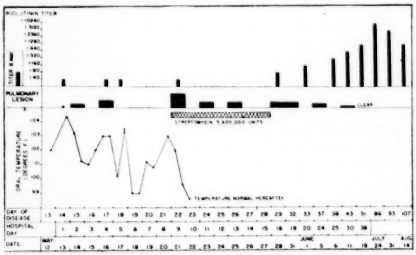

Fig. 4 (case 2).—Change in agglutinin titers and in temperature related to streptomycin therapy.

the temperature rose precipitously to 103 F. During the ensuing twenty-four hours there developed a pruritic, erythematous, macular rash over the trunk and extremities, and the sites of subcutaneous injections became intensely inflamed and indurated. The temperature subsided twenty-four hours after the cessation of chemotherapy. The patient was afebrile by the twelfth hospital day; the rash had subsided by the nineteenth hospital day. The serum agglutinin titer for Past. tularensis prior to infection had reached a peak of 1:320 subsequent to immunization (fig. 6). On the fifteenth hospital day, twenty days after infection, it was 1:1280. The patient was discharged on the eighteenth hospital day, completely well. She had no further symptoms during the period of observation which ended six weeks after her admission to the hospital.

GROUP II.—*Group II consists of 3 patients who were treated with streptomycin months after the acute stage of their illness because of persistent fatigue and intermittent fever. There was no obvious response to chemotherapy in any patient in this group, and 1 of them displayed sensitivity to the drug.*

CASE 5.—G. B. P., a man aged 29, a physician, was admitted to the hospital on July 17, 1944, one week after probable exposure to an aerosol of Past. tularensis and three days after the onset of fatigue, weakness, a slight cough, generalized muscular aching and fever. He had received immunization eight weeks previously.

During the first ten days of hospitalization his symptoms became more severe, and signs of consolidation in the lower lobe of the right lung were observed on the fifth day. He received an injection of 125 cc. of convalescent serum on the eighth day of illness, with no beneficial response. He was also given 980,000 units of penicillin from the seventeenth through the twenty-third day, after his fever had begun to subside. The pneumonic lesion visible by roentgen ray (fig. 7) reached its greatest extent on the fifteenth hospital day. Attempts to

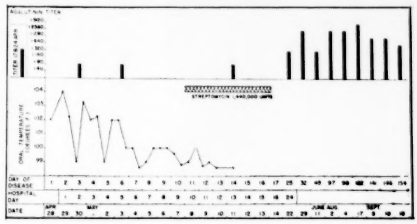

Fig. 5 (case 3).—Effect of streptomycin therapy on temperature and on serum agglutinin titer.

recover Past. tularensis from blood and sputum failed. His fever, which had progressed through an irregular spiking course during the first two weeks, subsided gradually during the third week and from the twenty-sixth hospital day onward did not exceed 99 F. His subjective symptoms subsided with the fever. He was discharged from the hospital on the twenty-seventh day. The serum agglutinin titers for Past. tularensis during the acute stage of disease varied between 1:20 and 1:160. By the twenty-sixth day, concurrently with clinical improvement, his titer reached 1:2560. The pulmonary lesions were visible on the fifty-ninth day; the first clear film was obtained on the ninety-ninth day after the onset (fig. 8).

After release from the hospital the patient suffered from persistent weakness and easy fatigability. In January 1945, six months after his original infection, he observed generalized glandular enlargement, and blood counts at this time revealed a moderate lymphocytosis. The heterophil sheep cell agglutination titer was negative. The agglutinin titer for Past. tularensis, which had maintained its original high level up to that time, fell to 1:160.

Eight months after the onset of his original illness, the patient cut a finger on a broken, contaminated test tube. Past. tularensis was isolated from the contents of the tube but

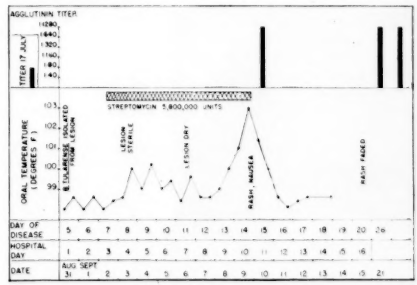

Fig. 6 (case 4).—Streptomycin therapy complicated by reaction to the drug.

not from the wound. For the four days following this accident he observed moderate fever, fatigue and enlargement of the regional axillary lymph nodes; the wound itself was tender. The agglutination titer at this time was 1:640. One month later, however, he had another short febrile episode with an exacerbation of generalized glandular enlargement, and the site of the laceration again became tender. A chest roentgenogram disclosed that the chest at this time was clear, but his

serum agglutinin titer for Past. tularensis fell to 1:160 during the two ensuing weeks, in which his symptoms persisted. By the end of three more weeks the titer had again risen to 1:1280. It is questionable whether this was a genuine reinfection or merely a sensitivity reaction, since no organisms were actually isolated from the wound. The fact that constitutional symptoms, glandular enlargement and lesion all persisted, and the subsequent rise in agglutinin titer support the probability of reinfection.

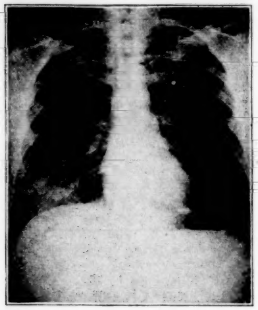

Fig. 7 (case 5).—Pulmonary lesion at its greatest extent fifteen days after the onset of symptoms.

For the succeeding two months the patient continued his subjective improvement. On June 12, 1945, eleven months after the original infection and three months after the probable reinfection, he was given a course of streptomycin therapy because of persistent fatigue and moderate intermittent fever. After three days of treatment with a total of 2,700,000 units, a rash developed without constitutional symptoms. Because this was considered a sign of toxicity administration of the drug was discontinued on the fourth day, and the rash subsided within twenty-four hours. During the ensuing two months the patient continued to improve, and his recovery was virtually complete by September 1945, fourteen months after the onset of his original illness and six months after his probable reinfection.

CASE 6.—J. R. S., a woman aged 24, a bacteriologist, had been working with Past. tularensis for two months prior to her admission to the hospital on Jan. 13, 1945, after five days of increasing fatigue, slight pain in the chest aggravated by deep breathing and night sweats. She had received immunization ten weeks previously. She had possibly been exposed to an infectious aerosol ten days prior to the onset of symptoms. Physical examination on admission was unremarkable except for a temperature of 100 F. and moderate prostration. A roentgenogram of the chest disclosed normal conditions, and attempts to isolate the organism from blood and from throat washings failed.

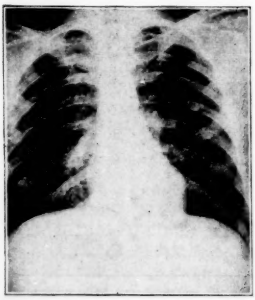

Fig. 8 (case 5).—Roentgenogram ninety-nine days after the onset of symptoms; pulmonary lesion cleared.

During the first two weeks of her hospitalization the patient ran an irregular febrile course, the temperature occasionally rising to 102 or 103 F. During this time she complained of intermittent pain in the chest and occasional chilly sensations. Repeated films of the chest remained unremarkable. By the fifteenth day she was afebrile and, though relatively asymptomatic, gave a history of persistent fatigue. Her serum agglutinin titer which had never exceeded 1:20 remained at that level during the acute stage of her illness, but by the fifty-third day after onset it had reached 1:1280. It remained approximately at this level throughout the rest of the period of observation. During the four months following her discharge from the hospital the patient continued to notice easy fatigability and occasional fever in the afternoon which did not exceed 100 F. Numerous physical examinations revealed nothing abnormal. Because of the persistive symptoms she was readmitted on June 11, 1945, six months after the onset of her illness, and was given 5,600,000 units of streptomycin, receiving 100,000 units intramuscularly every three hours over a seven day period. She observed slight subjective improvement during the last few days of treatment. However, it was not until three months later (nine months after the onset of her original illness and four months after chemotherapy) that she was able to resume her normal activities.

CASE 7.—E. G. C., a woman aged 24, a laboratory assistant, had been working with Past. tularensis for five months prior to admission to the hospital on April 28, 1945, four days after the onset of afternoon fatigue, headache and pain in the back. She had accidentally spilled a suspension of Past. tularensis on her hands approximately two weeks prior to admission, and this was the only known exposure. She had received immunization ten weeks before the onset of her illness. Physical examination on admission was unremarkable except for a temperature of 100.8 F. She was moderately fatigued.

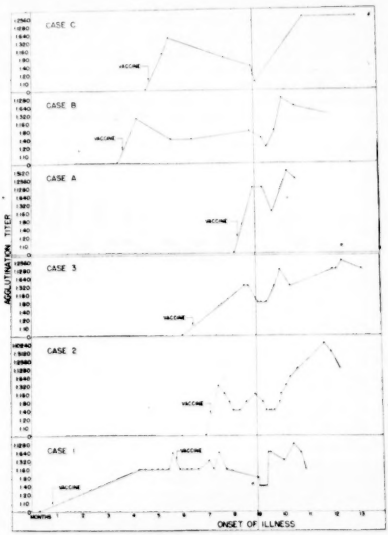

Fig. 9.—Serologic sequence of 6 cases (1, 2 and 3 of this series and A, B, C, additional cases of typhoidal tularemia not reported here). A fall in the serum agglutination titer of at least two tubes occurred coincident with or shortly after the onset of febrile illness.

Her hospital course was relatively benign and, aside from daily rises in temperature to 99 or 100 F., uneventful. After twenty-two days of rest in bed and of supportive care she was afebrile and her symptoms had subsided somewhat. Her serum agglutinin titer for Past. tularensis during the first week was 1:20 to 1:160. By the seventeenth day of disease, the tenth hospital day, it had risen to 1:2560. The titer remained at about this level throughout the period of observation. Subsequent to her discharge from the hospital on May 22, 1945, one month after the onset of illness, she continued to experience moderate fatigue, to tire easily and to have occasional afternoon elevations of temperature which did not exceed 99.6 F. Repeated films of the chest were negative. Because of persistence of fever and fatigue she was readmitted to the hospital on July 3, 1945, two months after the onset of illness, for streptomycin therapy. She received 100,000 units

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subcutaneously every three hours for a total of 5,600,000 units from the seventy-third through the eightieth days of disease. There was no obvious response to chemotherapy. Moderate fatigue and occasional slight afternoon elevations in temperature continued for several weeks, and it was not until five months after the onset of her original illness that she was completely free of symptoms.

COMMENT

1. *Diagnosis.*—Administration of the Foshay vaccine to the patients in the present series prior to their illness, as well as to other nonimmune persons who worked in the same laboratories, was found to produce a moderate serum agglutinin titer for Past. tularensis. In some instances this titer fell within two months after immunization; in others it remained elevated for longer periods. In 3 of the cases in the present series (1, 2 and 3) and in 3 additional cases (A, B, and C) of typhoidal tularemia which were observed by us but not otherwise dealt with in this report, there occurred a fall in titer of at least 2 tubes coincident with or shortly after the onset of febrile illness. (The complete serologic sequence for each of these 6 cases is presented in figure 9.) Since cultures of blood are infrequently positive we have found this phenomenon, when present, a valuable aid in the early diagnosis of typhoidal tularemia. In view of the apparent efficacy of streptomycin when it is given relatively early in the course of the disease, prompt presumptive diagnosis assumes greater practical importance. It must be emphasized, however, that this diagnostic aid applies only to persons who have been previously immunized against tularemia and on whom frequent agglutinin determinations are made. In practice its use would thus be limited to the differential diagnosis of acute febrile illness among laboratory workers handling the organism. The diagnosis in all our patients was of course confirmed in convalescence by the definite rise in titer usually observed. Past. tularensis was isolated from only 2 patients (2 and 4).

The predominant symptoms in all except the 1 patient with ulceroglandular tularemia were headache, moderate to extreme fatigue, generalized muscular pains and, in those patients with definite pulmonary involvement, unproductive cough. Two patients (3 and 6) without demonstrable visceral lesions as well as 2 patients with pneumonia (2 and 5) gave a history of pain in the chest which was aggravated by respiration. Three patients complained of nausea and 1 of vomiting and diarrhea. Only 1 patient (case 1) had frank shaking chills with the onset of disease; all others gave a history only of occasional "chilly sensations." There were no physical signs other than fever and prostration except those indicating pulmonary consolidation observed in 2 patients (2 and 5).

Diagnostic intradermal tests were not performed during the course of or subsequent to proved infection in these 7 patients because of severe local reactions previously observed in other patients who were skin-tested during convalescence.

2. *Effect of Prophylactic Vaccination.*—In considering the severity of the disease in these patients, the possible effects of vaccine administration are difficult to assess. However, they cannot be ignored, particularly since the infecting strain was one of high virulence for laboratory animals. These 7 cases have been reviewed by Dr. Lee Foshay, who has had wide experience with tularemia. In his opinion[9] these cases disclose a distinctly milder form of the disease than that observed in unvaccinated persons, even though they represent too small a segment of the immunized group to permit accurate appraisal of vaccine prophylaxis.

3. *Therapeutic Evaluation of Streptomycin.*—(*a*) Early Treatment (group I): Two patients (1 and 2) in group I exhibited a sudden change in their clinical course which was clearly attributable to the administration of streptomycin. In both cases, treatment began shortly after the onset of acute illness, and the fever and symptoms subsided within twenty-four to forty-eight hours after the inception of streptomycin therapy. It seems reasonable to conclude that the course of the disease in these 2 cases was significantly shortened by therapy.

An equivocal response was noted in patient 3, who was given streptomycin as the temperature was subsiding and after she had already shown some clinical improvement. The data do not allow more specific deductions.

In the mild case of ulceroglandular tularemia (case 4) the lesion of the patient was sterile and the lymphadenitis was receding before streptomycin was administered. From the standpoint of chemotherapy, this patient is of interest principally because of reaction to the drug, which caused the only constitutional symptoms.

(*b*) Late Treatment (group II): In decided contrast to results observed in group I, the patients in group II displayed no clearcut response to streptomycin therapy. It is possible that the continuation of moderate intermittent fever and fatigue reflected a residual active infection with Past. tularensis. However, if such was the case, one might have expected more definite improvement to follow the administration of streptomycin than was actually observed. The fact that this drug had no apparent effect on these 3 patients suggests the likelihood that their prolonged convalescence was due to the residual physiopathologic changes caused by the original infection. Such an explanation is in keeping with the lesions seen in monkeys long after infection, where localized foci of necrosis which are encountered in visceral lymph nodes contain few if any organisms. However, these considerations should not discourage the further trial of streptomycin against chronic tularemia, since it is possible that in some patients the prolonged course of the disease may actually be due to chronic infection, and some benefit might be derived from chemotherapy.

4. *Side Effects of Streptomycin.*—The local effects of streptomycin injection, either intramuscular or subcutaneous, were of two types. Regardless of the route of injection, all patients noted an immediate burning pain at the site of injection which lasted not more than half an hour. Within twenty-four hours after the first injection, a prolonged aching pain developed in the muscles in the region of multiple injections; it continued throughout the therapeutic period and lasted for a day or two beyond the last dose. The procaine hydrochloride lessened only the immediate pain. All patients reported both the immediate and the more prolonged types of pain, although the degree of discomfort varied widely among them.

The appearance of a macular cutaneous eruption was observed in 2 of our patients (5 and 4). The first was a slight but definite mottled erythema distributed over the trunk and extremities. It was not accompanied by fever or other signs of toxicity, and it subsided promptly with the cessation of treatment. In case 4, however, as indicated in the patient's chart, there developed moderate fever on the second day and a sudden pronounced elevation in temperature on the

9. Foshay, L.: Personal communication to the authors.

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seventh day of treatment, accompanied with the appearance of an intensely pruritic erythematous macular eruption over the trunk and extremities. With the development of these signs the sites of previous subcutaneous injections became swollen, erythematous and indurated. After discontinuance of the drug there was immediate subsidence of fever, and within five days the skin had cleared. There were no other signs of toxicity in this patient.

SUMMARY AND CONCLUSIONS

1. Tularemia occurred in 7 persons who had received the Foshay vaccine prior to the onset of illness. Four patients (group I) were treated with streptomycin shortly after the onset of disease; the remaining 3 (group II) were treated late in convalescence.

2. The prompt subsidence of acute subjective symptoms and clinical signs of disease after the institution of streptomycin therapy as well as the short period of convalescence in 2 cases of group I strongly suggest that the disease was arrested by the drug. Response to chemotherapy in the other 2 patients in this group was not clearcut.

3. There was no apparent response to streptomycin treatment in the patients in group II, who were treated late in convalescence.

4. Evidence of sensitivity to streptomycin occurred in 2 cases.

STREPTOMYCIN

Its Clinical Uses and Limitations

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In January 1944 Schatz, Bugie and Waksman [1] suggested that the antibacterial agent streptomycin possessed properties which might be of use in the treatment of diseases caused by a variety of gram-negative and some gram-positive pathogens. Since September 1944 we have subjected streptomycin to rather extensive clinical investigation. Evidence is accumulating as to the effectiveness of streptomycin in the treatment of a limited number of infections and its ineffectiveness in the treatment of many others. Future observations may change some of the present concepts concerning this antibiotic agent; however, sufficient material has been studied to justify certain conclusions at this time.

With few exceptions the degree of sensitivity of organisms to streptomycin as determined by in vitro studies can be used as an index of the probable effectiveness of streptomycin in the clinical field. Streptomycin has been found to be active in vitro against a variety of gram-negative and gram-positive bacteria.[2] Those most important from the clinical standpoint are listed in table 1. Studies on animals in most instances have confirmed the observations made from in vitro studies.[3]

The problem of variation in sensitivity of different strains of the same organism to the action of streptomycin is of considerable importance from the chemotherapeutic point of view. As has been pointed out repeatedly,[4] various strains of the same bacterial species may differ widely in their sensitivity to streptomycin. This variation in the sensitivity of different strains, plus the variation in the absorption and excretion of streptomycin by different patients or by the same patient at different times, makes clinical evaluation of this antibiotic agent exceedingly difficult. Unfortunately too, in vitro determinations of sensitivity and of concentration in the blood do not always give a correct picture of the clinical situation.

Rather extensive studies have been carried out on the absorption, diffusion and excretion of streptomycin.[5] Certain observations made in these studies are of considerable clinical importance. After oral administration, streptomycin cannot be detected in significant amounts in the blood or urine. However, the drug is not destroyed in the gastrointestinal tract and a large percentage of it can be recovered from the feces. Satisfactory concentrations of streptomycin can be obtained in the blood and urine by intravenous, intramuscular and subcutaneous administration. Streptomycin does not readily diffuse from the blood stream into the cerebrospinal fluid of normal persons. However, in the presence of meningitis, therapeutic amounts may diffuse rather readily. Antibacterial amounts given intrathecally usually remain in the cerebrospinal fluid at least twenty-four hours. Streptomycin penetrates into the peritoneal cavity in substantial amounts in early peritonitis. However, it does not readily diffuse into empyema cavities after intramuscular administration. Streptomycin introduced into the tracheobronchial tree by nebulization is not absorbed into the blood stream in significant amounts. In the average case from a half to three fourths of the streptomycin administered parenterally is excreted in the urine during the first twenty-four hours. Streptomycin appears to be concentrated and excreted in the bile. The total amount excreted in this way is small. As mentioned previously, the drug is excreted in the feces after oral administration, but very little is excreted in the feces after parenteral administration.

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The streptomycin used in these studies was kindly supplied by Abbott Laboratories, the Upjohn Company, Parke, Davis & Company, Eli Lilly and Company, and Merck & Co., Inc. Beginning March 1, 1946 the streptomycin was provided by the National Research Council from supplies assigned for clinical investigations recommended by the Committee on Chemotherapeutics and Other Agents.

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(Footnote 2 continued in next column)

3. Hegarty, C. P.; Thiele, Elizabeth, and Verwey, W. F.: The In Vitro and In Vivo Activity of Streptomycin Against Hemophilus Pertussis, J. Bact. **50**: 651-654 (Dec.) 1945. Heilman, F. R.: Streptomycin in the Treatment of Experimental Infections with Micro-Organisms of the Friedländer Group (Klebsiella), Proc. Staff Meet., Mayo Clin. **20**: 33-39 (Feb. 7) 1945. Jones, Doris; Metzger, H. J.; Schatz, Albert, and Waksman, S. A.: Control of Gram-Negative Bacteria in Experimental Animals by Streptomycin, Science **100**: 103-105 (Aug. 4) 1944. Live, I.; Sperling, F. G., and Stubbs, E. L.: Effect of Streptomycin on Experimental Brucellosis in Guinea Pigs, Am. J. M. Sc. **211**: 267-272 (March) 1946. Wayson, N. E., and McMahon, Margaret C.: Plague: Treatment of Experimental Animals with Streptomycin, Sulfadiazine and Sulfapyrazine, J. Lab. & Clin. Med. **31**: 323-332 (March) 1946. Heilman (footnotes 9 and 12). Waksman and Schatz.[6] Hinshaw and Feldman.[13]

4. Reimann, H. A., Price, A. H., and Elias, W. F.: Streptomycin for Certain Systemic Infections and Its Effect on the Urinary and Fecal Flora, Arch. Int. Med. **78**: 269-277 (Nov.-Dec.) 1945. Waksman, S. A.; Reilly, H. Christine, and Schatz, Albert: Strain Specificity and Production of Antibiotic Substances: V. Strain Resistance of Bacteria to Antibiotic Substances, Especially to Streptomycin, Proc. Nat. Acad. Sc. **31**: 157-164 (June) 1945. Waksman and Schatz.[6]

5. Adcock, J. D., and Hettig, R. A.: Absorption, Distribution and Excretion of Streptomycin, Arch. Int. Med. **77**: 179-195 (Feb.) 1946. Anderson, D. G., and Jewell, Marjorie: The Absorption, Excretion and Toxicity of Streptomycin in Man, New England J. Med. **233**: 485-491 (Oct. 25) 1945. Buggs, C. W.; Pilling, M. A.; Bronstein, Bernice, and

(Footnote 5 continued on next page)

DOSAGE AND METHODS OF ADMINISTRATION

When streptomycin was first introduced, the unit of potency was defined on the basis of its antibacterial properties.[6] Recently the metric system has been adopted to define the unit of potency. One microgram of pure streptomycin base is approximately equivalent to the original S unit of Waksman. Hence 1 mg. of streptomycin is equal to approximately 1,000 S units, and 1 Gm. of streptomycin is approximately equivalent to 1,000,000 S units. Henceforth in this report all unit values will be those of the S unit or the original Escherichia coli unit as described by the Rutgers investigators.

TABLE 1.—*Antibacterial Action of Streptomycin*

Organisms Sensitive to Streptomycin
Escherichia coli
Eberthella typhosa
Salmonella paratyphi
Salmonella enteritidis
Shigella dysenteriae
Proteus vulgaris
Aerobacter aerogenes
Pseudomonas aeruginosa (Bacillus pyocyaneus)
Klebsiella pneumoniae
Hemophilus influenzae
Hemophilus pertussis
Staphylococcus aureus (some strains)
Mycobacterium tuberculosis
Brucella melitensis
Brucella abortus
Brucella suis
Pasteurella tularensis
Pasteurella pestis

For most infections treated with streptomycin at the Mayo Clinic a minimal total daily dose of from 1,000,000 to 3,000,000 units (1 to 3 Gm.) has been used. A daily dose of as much as 10,000,000 units (10 Gm.) has been given occasionally.

Parenteral Administration.—Streptomycin usually is administered to patients by the intramuscular route, and solutions containing 100,000 to 200,000 units (100 to 200 mg.) per cubic centimeter usually are preferred. Some of the more highly purified preparations are well tolerated when administered subcutaneously in similar concentrations, but other preparations contain irritating impurities which make this route less desirable than the intramuscular route. When given by the intramuscular or subcutaneous route, streptomycin may be administered every three to four hours or, at most, at intervals of six hours. Streptomycin at times may be given intravenously, but concentrated solutions should not be administered by this route because of the occasional presence of physiologically potent impurities, which may produce serious results. Streptomycin on the other hand may be given in dilute solution by continuous intravenous infusion. The total dose for the day is dissolved in 1 or 2 liters of isotonic solution of sodium chloride.

Oral Administration.—When the effect of streptomycin is desired within the gastrointestinal tract, oral administration has been used. Daily doses ranging from 2,000,000 to 3,000,000 units (2 to 3 Gm.) have been given.

Intrathecal Administration.—Intrathecal administration has been used at times when high concentrations of streptomycin have been desired in the cerebrospinal fluid. Single injections of as much as 100,000 units (100 mg.) in 5 or 10 cc. of isotonic solution of sodium chloride have been given intrathecally without evidence of serious reactions. In the treatment of infections involving the structures of the central nervous system, this amount may be given by the intrathecal route every twenty-four to forty-eight hours. Before the intrathecal injection is made, a sufficient amount of spinal fluid may be withdrawn to permit routine bacteriologic and other laboratory studies, including the determination of the level of streptomycin in the cerebrospinal fluid.

Administration by Means of Nebulization.—Insufflation of nebulized streptomycin directly into the tracheobronchial tree has been an effective method of administration. Concentrations of the drug as high as 50,000 units (50 mg.) per cubic centimeter of isotonic solution of sodium chloride have not produced irritation of the bronchial mucosa.

Local Administration.—Streptomycin may be used locally and may be injected directly into empyema and abscess cavities. Concentrations of the drug of 10,000 to 100,000 units (10 to 100 mg.) per cubic centimeter of isotonic solution of sodium chloride have been used.

ANALYSIS OF CLINICAL RESULTS

Streptomycin has been used under our personal supervision in the treatment of 104 patients (tables 2, 3 and 4). We shall refer to this group as series 1. We also have had the opportunity of analyzing the results obtained in the treatment of 88 other patients (table 5), which we shall refer to as series 2.[7]

Bacteremia.—We have used streptomycin in the treatment of 17 cases of bacteremia (table 2). The organism isolated in 5 cases was Escherichia coli. Brucella was isolated in 5 cases, Proteus ammoniae in 1, Aerobacter aerogenes in 1, Salmonella in 1 and Pseudomonas aeruginosa in 1. In 2 cases a mixture of organisms was isolated. In 1 of these cases the infecting organisms were Proteus ammoniae and Salmonella and in the other Escherichia coli and Proteus ammoniae. A strain of Staphylococcus aureus which was resistant to penicillin was isolated in 1 case.

TABLE 2.—*Results of Treatment of Bacteremia with Streptomycin: Series 1*

Organism	Cases	Results		
		Good	Doubtful	Poor
Escherichia coli	5	4	..	1
Proteus ammoniae	1	1	..	..
Aerobacter aerogenes	1	1	..	..
Brucella	5	3	2*	..
Pseudomonas aeruginosa	1	1	..	..
Salmonella	1	..	..	1
Gram-negative bacilli (mixed)	2	2	..	..
Staphylococcus aureus	1	..	1†	..
Total	17	12	3	2

* Blood cultures became negative, but symptoms persisted.
† Blood cultures became negative but later became positive again.

The patient suffering from bacteremia due to Escherichia coli who had a poor result from treatment with

Hirshfeld, J. W.: The Absorption, Distribution and Excretion of Streptomycin in Man, J. Clin. Investigation **25:** 94-102 (Jan.) 1946. Elias, W. F., and Durso, J.: Blood, Urine and Fecal Levels of Streptomycin in Treatment of Human Infections of E. Typhosa, Science **101:** 589-591 (June 8) 1945. Heilman, Dorothy H.; Heilman, F. R.; Hinshaw, H. C.; Nichols, D. R., and Herrell, W. E.: Streptomycin: Absorption, Diffusion, Excretion and Toxicity, Am. J. M. Sc. **210:** 576-584 (Nov.) 1945. Reimann, H. A.; Elias, W. F., and Price, A. H.: Streptomycin for Typhoid: Pharmacologic Study, J. A. M. A. **128:** 175-180 (May 19) 1945. Rutstein, D. D.; Stebbins, R. B.; Cathcart, R. T., and Harvey, R. M.: The Absorption and Excretion of Streptomycin in Human Chronic Typhoid Carriers, J. Clin. Investigation **24:** 898-909 (Nov.) 1945. Zintel, H. A.; Flippin, H. F.; Nichols, Anna C.; Wiley, Marjorie M., and Rhoads, J. E.: Studies on Streptomycin in Man: I. Absorption, Distribution, Excretion and Toxicity, Am. J. M. Sc. **210:** 421-430 (Oct.) 1945.

6. Waksman, S. A., and Schatz, Albert: A Review—Streptomycin, J. Am. Pharm. A. **6:** 308-321 (Nov.) 1945.

7. Hazel, George: Personal communication to the authors.

streptomycin died of acute vegetative endocarditis. Symptoms suggestive of endocarditis were present at the time treatment with streptomycin was started. The patient with bacteremia due to a Salmonella who failed to recover on treatment with streptomycin died also. This patient was suffering from far advanced cirrhosis of the liver as well as bacteremia. Postmortem examination revealed a few granulomas in the liver in addition to the cirrhosis, but there was no evidence of infection elsewhere in the body. The patient suffering from Staphylococcus aureus septicemia had severe thrombophlebitis in addition to the septicemia. Treatment with penicillin failed to affect the course of the infection, and in vitro studies showed the organism to be relatively resistant to penicillin. Growth of the organism was inhibited by less than 12 units of streptomycin per cubic centimeter of culture medium. The patient's condition improved greatly after institution of treatment with streptomycin. She became afebrile, and blood cultures became negative. Relapse occurred four days after treatment with streptomycin had been started and blood cultures again became positive for Staphylococcus aureus. Sulfadiazine then was given in addition to streptomycin. The patient recovered completely under this combined form of treatment. In the 5 cases of acute brucellosis with bacteremia Brucella disappeared from the blood stream during treatment with streptomycin. However, the symptomatic course of the illness was unaltered in 2 cases and the blood cultures may have become negative spontaneously and not as a result of treatment with streptomycin. In a third case it was necessary to combine splenectomy with the use of streptomycin before a satisfactory result was obtained. The disappointing results of the treatment in most cases of brucellosis will be discussed later in the section on miscellaneous infections.

TABLE 3.—*Results of Treatment with Streptomycin in Infections of the Urinary Tract: Series 1*

Organism	Cases	Results		
		Good	Doubtful *	Poor
Proteus ammoniae	3	2	1	..
Aerobacter aerogenes	4	3	..	1
Escherichia coli	11	4	1	6
Pseudomonas aeruginosa	10	3	..	7
Gram-negative bacilli (mixed)	8	4	..	4
Gram-positive and gram-negative bacilli (mixed)	5	1	..	4
Total	41	17	2	22

* Cultures became negative but clinical response was poor.

TABLE 4.—*Results of Treatment of Miscellaneous Infections with Streptomycin: Series 1*

Diagnosis	Infecting Organism	Cases	Results		
			Good	Doubtful	Poor
Meningitis	Hemophilus influenzae	4	4	..	
	Gram-negative bacilli	2	1	..	1
Pulmonary infection					
Bronchiectasis	Gram-negative bacilli	5	..	4*	1
Empyema	Hemophilus influenzae	1	1	..	..
Lung abscess	Gram-negative and gram-positive bacilli	1	..	..	1
Pneumonia	Paracolon bacillus	1	1	..	..
Syphilis	Treponema pallidum	4	..	..	4
Ozena	Klebsiella pneumoniae	5	1	2†	2
Miscellaneous infections		23	2	5	16
Total		46	10	11	25

* Gram-negative bacilli eliminated from sputum in each case.
† Cultures became negative but symptoms were relieved only temporarily.

On examination of table 5 it will be seen that the results of treatment with streptomycin of 9 cases of bacteremia in series 2 were not quite as satisfactory as in those cases in which we supervised the treatment personally. However, 2 of these 9 patients in series 2 were in a terminal stage at the time administration of the drug was started.

Whenever the effectiveness of any antibacterial agent in the treatment of bacteremia due to gram-negative bacilli is being evaluated, it should be remembered that even before the introduction of sulfonamides approximately half of the patients who had bacteremia due to gram-negative bacilli recovered. Since the introduction of the sulfonamides, results have been even better. From examination of the results reported here, however, it appears that bacteremia due to gram-negative organisms responds well to streptomycin, provided the organisms are sensitive to this antibiotic agent and provided acute bacterial endocarditis has not already developed.

TABLE 5.—*Results of Treatment with Streptomycin in Eighty-Eight Cases: Series 2*

Diagnosis	Infecting Organism	Cases	Results		
			Good	Doubtful	Poor
Bacteremia	Escherichia coli	2	1	..	1
	Brucella	1	..	..	1
	Salmonella	3	2	..	1
	Hemophilus influenzae	3	2	..	1
Infection of urinary tract	Escherichia coli	12	6	3	3
	Gram-negative bacilli (mixed)	3	..	..	3
	Gram-negative and gram-positive bacilli (mixed)	2	..	..	2
	Proteus ammoniae	2	2	..	..
	Pseudomonas aeruginosa	2	1	..	1
	Aerobacter aerogenes	1	1	..	..
	Alcaligenes fecalis (Bacillus alcaligenes)	1	1	..	..
Pneumonia	Gram-negative bacilli	4	2	..	2
Meningitis	Hemophilus influenzae	14	11	1	2
	Escherichia coli	2	..	..	2
Tularemia	Pasteurella tularensis	15	15	..	..
Miscellaneous		21	1	..	20
Total		88	45	4	39

Infections of the Urinary Tract.—Infections of the genitourinary tract due to certain susceptible gram-negative organisms respond well to treatment with streptomycin, but the results in the routine treatment of urinary infections with streptomycin are disappointing. The outcome of these infections is, of course, dependent to some degree on the coexisting pathologic processes present in addition to the infection. The results were considered good for 17 of the 41 patients treated under our supervision (table 3). The best results seemed to be obtained when the organism of infection was either Proteus ammoniae or Aerobacter aerogenes. Proteus ammoniae was the sole infecting organism in 3 cases and was one of the infecting organisms in 4 other cases. It was eliminated in all cases. Aerobacter aerogenes was the sole infecting organism in 4 cases and was one of the infecting organisms in 4 other cases. It was eliminated in all but 1 case. Some strains of Escherichia coli responded satisfactorily, while others did not. In only a few cases was urinary infection due to Pseudomonas aeruginosa controlled by treatment with streptomycin. The results of treatment of infections of the urinary tract in 23 cases in series 2 were similar (table 5). When streptomycin is to be used in the treatment of infections

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of the urinary tract, it appears exceedingly important to withhold treatment until urinary stasis and obstruction have been overcome. Likewise it appears exceedingly important to eliminate foreign bodies, either stones or catheters, before treatment with streptomycin is instituted. The presence of stasis and foreign bodies favors persistence of the infection and development of resistance on the part of the infecting organisms.

Meningitis.—Meningitis due to Hemophilus influenzae responded satisfactorily to treatment with streptomycin. Four patients were treated under our personal supervision (table 4). Hemophilus influenzae, type B, caused the meningitis in 3 of these cases; in the fourth case the organism was not typed. Additional treatment in the form of sulfonamides and antiserum was employed. However, clinical and laboratory evidence of improvement did not occur in 2 of the cases until streptomycin therapy was used. The results of treatment with streptomycin were considered good in all 4 cases. These cases are being reported in more detail elsewhere.[8] Of the 14 patients who had meningitis due to Hemophilus influenzae in series 2 (table 5), 11 responded satisfactorily to streptomycin.

Only 1 of the 4 patients in the combined series who had meningitis due to other gram-negative bacilli responded well to treatment with streptomycin. The meningitis in this 1 case was due to Escherichia coli. The patient was given streptomycin by both the intramuscular and the intrathecal routes. A complete cure resulted.

Tularemia.—Reports from several different investigators have attested to the dramatic effect of streptomycin in tularemia.[9] The morbidity and mortality from this disease appear to be greatly decreased. The results of treatment in the 15 cases in series 2 (table 5) give further evidence of the effectiveness of streptomycin in the treatment of this disease. The diagnosis of tularemia in each of these 15 cases was confirmed by demonstrations of agglutination reactions of increasing titer or by positive cultures from local lesions. In all 15 cases the clinical results were excellent and complete recovery followed.

Pulmonary Infections.—Encouraging but inconclusive results have been obtained in the treatment of some types of pulmonary disease. Temporary or permanent eradication of sensitive organisms from the tracheobronchial tree usually can be achieved when streptomycin is given by nebulization. In 6 of the group of 8 patients in our series who had pulmonary infection (table 4) gram-negative bacilli were eliminated from the sputum. Streptomycin was given parenterally in all our cases; in some it was given by nebulization also. A detailed study of this type of infection has been carried out at the clinic by Dr. A. M. Olsen. In the group of cases reported by him[10] gram-negative bacteria disappeared rapidly from the pulmonary secretion and there was decided reduction of the volume of the sputum when streptomycin was used as an agent for nebulization. It appears that streptomycin by nebulization is of definite value in the preparation for pulmonary resection in cases of bronchiectasis. Further investigation into the treatment of nonsurgical bronchiectasis with streptomycin appears indicated.

When gram-negative bacteria have been eliminated from pulmonary secretions following the use of streptomycin, certain gram-positive organisms which are resistant to streptomycin but sensitive to penicillin may still be present. In fact, the elimination of the organisms sensitive to streptomycin frequently may favor the growth of bacteria which are sensitive to penicillin. Therefore, penicillin frequently is combined with streptomycin in an effort to eliminate, as far as possible, pathogens sensitive to streptomycin as well as those sensitive to penicillin. There is no contraindication to the simultaneous use of the two antibiotics.

Tuberculosis.—During the past two and a half years Hinshaw and Feldman have investigated the possibilities of streptomycin in the treatment of tuberculosis. Treatment in all cases of tuberculosis at the clinic has been under their supervision. Recently they[11] have reported their impressions obtained from the study of 54 patients with different types of clinical tuberculosis who were treated with streptomycin. Their evidence clearly indicates that streptomycin does not exert a rapidly curative effect on clinical tuberculosis, although it does appear to modify the course of the disease in a favorable manner in some cases. Careful study of an adequate number of patients over a considerable period will be necessary before a final judgment can be reached concerning the effect of streptomycin on clinical tuberculosis.

Syphilis.—In view of the experimental studies by Heilman[12] suggesting that streptomycin possesses some antispirochetal activity, it was tried in 4 cases of syphilis (table 4). The results have been inconclusive because of inadequate dosage. However, it does not appear that streptomycin is particularly effective in the treatment of this disease.

Ozena.—We have treated 5 cases of ozena (table 4) in which it was possible to obtain on culture the organism Klebsiella pneumoniae, which is fairly sensitive to the action of streptomycin. Symptomatic improvement followed treatment in 3 of the cases, but symptoms recurred in 2 of these at a later date. In 2 cases the symptoms were not relieved. When treatment with streptomycin was begun in these cases, the organisms isolated from nasal secretions were sensitive to streptomycin. The organisms isolated later during treatment showed much resistance to the antibiotic agent. This may explain the poor clinical results.

Miscellaneous Infections.—Included in the group of 23 cases of miscellaneous types of infections in series 1 were cases of typhoid, undulant fever, osteomyelitis, cellulitis, peritonitis and cholangitis (table 4). Results in only 2 of these cases could be considered satisfactory. In 1 of these 2 cases peritonitis due to Escherichia coli was present; both streptomycin and surgical drainage were used. In the other case in which a satisfactory result was achieved cholangitis due to Escherichia coli was present. Three cases of typhoid or paratyphoid are included in the group of miscellaneous infections. In each of these cases treatment was unsuccessful.

Included in the group of miscellaneous infections treated with streptomycin in series 1 are 6 cases of probable brucellosis in which blood cultures were nega-

8. Logan, G. B., and Herrell, W. E.: Unpublished data.
9. Heilman, F. R.: Streptomycin in the Treatment of Experimental Tularemia, Proc. Staff Meet., Mayo Clin. **19:** 553-559 (Nov. 29) 1944. Abel, Oliver, Jr.: The Use of Streptomycin in Tularemia, J. Missouri M. A. **43:** 167-169 (March) 1946. Foshay, Lee, and Pasternack, A. B.: Streptomycin Treatment of Tularemia, J. A. M. A. **130:** 393-398 (Feb. 16) 1946.
10. Olsen, A. M.: Streptomycin Aerosol in the Treatment of Chronic Bronchiectasis: Preliminary Report, Proc. Staff Meet., Mayo Clin. **21:** 53-54 (Feb. 6) 1946.
11. Hinshaw, H. C., and Feldman, W. H.: Streptomycin: Summary of Clinical and Experimental Observations, J. Pediat. **28:** 269-274 (March) 1946.
12. Heilman, F. R.: Streptomycin in the Treatment of Experimental Relapsing Fever and Leptospirosis Icterohemorrhagica (Weil's Disease), Proc. Staff Meet., Mayo Clin. **20:** 169-176 (May 30) 1945.

tive. The 5 cases of brucellosis in series 1 in which blood cultures were positive have been discussed previously in the section on bacteremia. Results of treatment of brucellosis have been disappointing. Streptomycin appeared to have a suppressive effect in 3 cases of acute brucellosis. In 1 of these 3 cases, however, positive blood cultures recurred until the use of streptomycin was combined with splenectomy. It is doubtful whether streptomycin was of value in any of the remaining 8 cases of brucellosis.

Heilman [13] in his laboratory studies noted that he was unable to eliminate Brucella from the spleen of animals even with relatively large doses of streptomycin. The satisfactory result obtained through combining the use of streptomycin and splenectomy in 1 seriously ill patient suggests that this combination may be of value in the treatment of other patients who are seriously ill from brucellosis.

Streptomycin may prove of value in some cases of peritonitis. Our experience has been discouraging, but in most of the cases of this type in which streptomycin was used the infection was advanced. We have used streptomycin in the treatment of a few infected wounds. The results to date in these cases have been disappointing.

Included in the group of the 21 miscellaneous infections treated with streptomycin in series 2 are cases of osteomyelitis, wound infections, ulcerative colitis and peritonitis. In 1 case of peritonitis due to mixed gram-negative bacilli the result appeared good. In all other cases in this series it is doubtful that streptomycin had any beneficial effect.

DEVELOPMENT OF RESISTANCE

The ability of some strains and species of organisms to develop resistance rapidly to streptomycin has been demonstrated repeatedly.[14] In vitro studies have shown that sensitive strains can be made resistant to streptomycin rapidly. Clinically a similar development of resistance appears to take place. Buggs and his associates,[15] however, have pointed out the difficulties encountered in studying this problem clinically, particularly the difficulty in determining whether or not the same organism is being isolated when cultures are obtained over a number of days from a given patient. We have observed the apparent development of resistance of the infecting organism to streptomycin in 4 cases. Growth of a strain of Escherichia coli isolated in 1 case of bacteremia immediately before treatment with streptomycin was started was inhibited by 10 units of streptomycin per cubic centimeter of culture medium. Growth of the organism isolated from cultures taken three days later was not inhibited by 200 units of streptomycin per cubic centimeter. It is, of course, possible but not probable that the bacteremia was caused by two different strains of Escherichia coli. In 2 cases of urinary infection and in 1 case of infection of the biliary tract resistance of an organism to streptomycin appeared to develop. These types of infections, however, are characteristically polyvalent, and suppression of a sensitive strain of bacteria may have permitted growth of a strain resistant to streptomycin. Frequently after the suppression of a sensitive strain of organism in cases of urinary infection we have noted the growth of an entirely different species of organism. However, when the same species of organism is isolated, it may signify the development of resistance.

The possibility of the development of resistance to streptomycin is, of course, of great clinical importance. It appears essential that bacteria be eradicated completely in the shortest possible time if satisfactory clinical results are to be obtained. This, of course, means the administration of large doses of streptomycin from the onset of treatment and frequent recourse to the laboratory for the determination of the sensitivity of the organism in vitro if the infection does not respond satisfactorily to treatment. The eradication of abscesses and foreign bodies by surgical measures as early as possible is important. In the treatment of urinary infections, keeping the urine alkaline appears clinically, as well as experimentally, to enhance the effectiveness of streptomycin. All other measures which will help to eradicate the infecting organism completely before it has had an opportunity to develop resistance appear to be important in achieving satisfactory clinical results.

CONSIDERATION OF TOXICITY

The streptomycin which has been used to date appears to have some toxic properties. Nausea, malaise, fever, renal irritation, arthralgia and local reactions at the site of injection have been noted. These forms of toxicity probably are due to impurities.[16] Some other forms of toxicity appear to be produced by the streptomycin itself. These types of toxicity have been observed primarily in manifestations of involvement of the eighth cranial nerve. A detailed study of this problem has been carried out by Dr. H. A. Brown of the Section on Otolaryngology and Rhinology at the clinic. Both auditory and vestibular functions have been definitely reduced in some patients, particularly those who have received large amounts of the drug over prolonged periods. Tinnitus and dizziness usually are the first symptoms noted. If administration of the drug is not continued too long or in too great amounts after these toxic manifestations appear, the process is reversible and normal functions usually are regained. However, in some cases it appears that the nerve or cochlea is damaged permanently.

Skin reactions in some cases appear to be due to the streptomycin itself. These skin reactions may be troublesome at times. Skin reactions which accompany or follow streptomycin therapy may appear in different forms. Urticaria with or without pruritus may develop. Likewise the reaction may take the form of maculopapular local or generalized dermatitis. Contact dermatitis may occur at times among persons handling the material (occupational dermatitis). When skin reactions develop, it frequently is necessary to discontinue treatment with streptomycin. The reaction usually subsides then. At times streptomycin may be administered again without the development of dermatitis. This is particularly true if one batch of material is exchanged for another when treatment is renewed. Benadryl has been found effective in the treatment of urticaria and dermatitis which have developed during the course of streptomycin therapy. The dose of benadryl recommended is one capsule (50 mg.) three times per day.

Fatty metamorphosis of the liver and kidney has been observed in animals and appears to be due to the

13. Heilman, F. R.: Personal communication to the authors.
14. Miller, C. P., and Bohnhoff, Marjorie: Streptomycin Resistance of Gonococci and Meningococci, J. A. M. A. **130**: 485-488 (Feb. 23) 1946. Buggs, Bronstein, Hirshfeld and Pilling,[15] Heilman.[13]
15. Buggs, C. W.; Bronstein, Bernice; Hirshfeld, J. W., and Pilling, M. A.: The In Vitro Action of Streptomycin on Bacteria, J. A. M. A. **130**: 64-67 (Jan. 12) 1946.
16. Hettig, R. A., and Adcock, J. D.: Studies on the Toxicity of Streptomycin for Man: A Preliminary Report, Science **103**: 355-357 (March 22) 1946. Molitor, Graessle, Kuna, Mushett and Silber [17]

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streptomycin and not to impurities.[17] However, careful studies on man have failed to reveal any evidence of significant hepatic or renal damage from pure streptomycin. There appears to be great variation in the susceptibility and reaction of different patients to the drug. Doses of 4,000,000 units (4 Gm.) daily and more have been given for considerable periods without any unfavorable reactions.

SUMMARY AND CONCLUSIONS

The antibiotic agent streptomycin appears to have a place in the treatment of certain important bacterial infections. With few exceptions the degree of sensitivity of organisms to streptomycin as determined by in vitro studies can be used as an index of the probable effectiveness of the treatment with streptomycin.

Satisfactory concentrations of streptomycin can be obtained in the blood and urine following intravenous, intramuscular and subcutaneous administration. The antibiotic is not destroyed in the gastrointestinal tract, and a large percentage of it can be recovered from the feces when it is given by mouth. After oral administration, however, streptomycin cannot be detected in significant amounts in the blood and urine of patients. Streptomycin may be administered locally. It also may be administered by means of intrathecal injection and it may be instilled into various body cavities. Streptomycin diffuses fairly readily throughout the body. It is excreted readily in the urine without evidence of a toxic effect on the kidney. The usual daily dose of streptomycin employed in the treatment of infections is 2,000,000 to 3,000,000 units (2 to 3 Gm.).

From the analysis of the results obtained in the treatment of 104 patients (series 1) who received streptomycin under our own supervision and from the analysis of the results obtained in an additional group of 88 cases (series 2), certain conclusions can be made.

Streptomycin appears to be of considerable value in the treatment of bacteremia due to gram-negative organisms sensitive to its action.

Streptomycin is of definite but limited value in the treatment of infections of the urinary tract. Best results are obtained when the organism of infection is Proteus vulgaris or Aerobacter aerogenes. Good results may be obtained at times when the organism of infection is Escherichia coli or Pseudomonas aeruginosa. Intensive treatment for a short duration appears to yield the best results.

Meningitis due to Hemophilus influenzae usually responds satisfactorily to streptomycin. Additional treatment in the form of sulfonamides and antiserum may be indicated for this infection. Streptomycin appears to be of greatest value in the treatment of tularemia. It appears to be of definite value in the preparation of patients for pulmonary resection. Temporary or permanent eradication of sensitive organisms from the tracheobronchial tree at times can be achieved by its use. Temporary symptomatic improvement may occur from the use of streptomycin in the treatment of ozena. At this time final statements cannot be made concerning the value of streptomycin in the treatment of pulmonary and extrapulmonary tuberculosis.

Included among the infections in which streptomycin has proved of doubtful value are typhoid and paratyphoid fever, undulant fever, osteomyelitis, peritonitis and cholangitis.

Organisms at times develop resistance to streptomycin with incredible rapidity. This has a tremendously important bearing on the clinical results obtainable following its use.

No serious uncontrollable toxic reactions have been encountered from use of streptomycin in the cases herein reported. On the other hand, irreversible neurotoxic effects on the eighth cranial nerve may occur if treatment with streptomycin is prolonged.

17. Molitor, Hans; Graessle, O. E.; Kuna, Samuel; Mushett, C. W., and Silber, R. H.: Some Toxicological and Pharmacological Properties of Streptomycin. J. Pharmacol. & Exper. Therap. **86**: 151-173 (Feb.) 1946.

ABSTRACT OF DISCUSSION

DR. HOBART A. REIMANN, Philadelphia: Our experience with streptomycin at Jefferson Hospital has been essentially the same as that of Drs. Nichols and Herrell, and I concur in their opinions. The failure of streptomycin to influence typhoid and undulant fever is indeed disappointing, considering the theoretically adequate amounts of the drug which appear in the blood during parenteral therapy. Undoubtedly some factors are present in the body which interfere with the bactericidal action of streptomycin. Perhaps the fact that Eberthella typhosa and Brucella are found intracellularly partly explains their persistence in the body during therapy and the poor clinical results obtained. Streptomycin likewise had no significant effect in the treatment of cholera, even though certain strains of Vibrio comma are highly sensitive to streptomycin in the test tube and are present only in the intestine, where large amounts of the drug accumulate during oral therapy. On the other hand, streptomycin given orally has a striking effect in reducing the intestinal flora and may prove useful in preparing the bowel for surgical operation.

COLONEL MICHAEL E. DEBAKEY, M. C., A. U. S.: The summarized observations which I shall present are based on the experience of thirty U. S. Army hospitals between August 1945 and May 1946 inclusive and concern 706 cases so completely recorded that competent analysis was possible. Streptomycin was administered parenterally, locally, intrathecally, intrapleurally and orally, depending on the type of infection. The intermittent muscular injection method proved most efficacious for systemic administration, and topical applications proved of little value. Of the 364 urinary tract infections observed, 141 were improved and 218 unimproved; 5 patients died. Streptomycin is undoubtedly a very useful agent in urinary infections if the causative bacteria are susceptible and if there is a free flow of urine. Recurrent urinary tract obstruction, urinary retention and the presence of undrained or unsterilizable foci, including prostatic foci, predispose to relapse or reinfection, and treatment with streptomycin under these circumstances can produce rapid and irreversible drug fastness. Success was particularly striking in 5 cases of gonococcic urethritis which had proved intractable under adequate doses of sulfadiazine and penicillin. Of 179 wound infections, all combat incurred and most of them associated with chronic osteitis, fibrosis and impoverishment of the local circulation, 72 were improved and 105 unimproved; there were 2 deaths. It is highly significant that in the group of improved cases, improvement was always coincidental with apparently adequate wound revision, which seems to indicate that in wound infections streptomycin is effective only as an adjunct to adequate surgery and thus differs in no respect from other chemotherapeutic agents with regard to its place in the surgical management of these conditions. Twenty-one of 34 cases of enteric infection and colitis were improved following streptomycin therapy, and the conclusion seems warranted that, if the causative organisms are susceptible, streptomycin is a useful agent in such conditions. No substantial benefits were demonstrated in nonspecific ulcerative colitis. Other groups are too small to permit definitive statements, but certain data may be cited. Improvement was recorded in 24 of 30 cases of peritonitis, in half of which, however, the infection was already localized or localizing. Thirteen of 16 patients with bacteremia were improved, which suggests that when the organisms are sensitive the results are likely to be highly effective. Four of 15

patients with tuberculosis were improved, including 2 (of 7) with urinary tract involvement, 1 (of 4) with spreading pulmonary disease and 1 (of 3) with meningitis. The striking improvement which followed streptomycin therapy in a few of these cases seems to warrant more intensive testing. Of 7 patients with nontuberculous meningitis 5 were improved and 2 died; treatment was inadequate in 1 of the latter cases and the organism was insensitive to streptomycin in the other.

CAPTAIN EDWIN J. PULASKI, M. C., A. U. S.: An intensive clinical and laboratory study of streptomycin was begun at Halloran General Hospital, Staten Island, New York, in July 1945 and is still under way. It is intended here to highlight some of the laboratory findings. A modification of the broth serial dilution method was developed for determining the streptomycin sensitivity of bacteria as well as for assay of the drug in body fluids. The results obtained from testing 165 stock cultures of organisms and 550 cultures of bacteria freshly isolated from 143 infections show that: 1. Streptomycin inhibits the growth in vitro of many aerobic gram-positive and gram-negative organisms, while the anaerobic Clostridia are uniformly insensitive. Individual strains show considerable variation in susceptibility; for example, twelve different typhoid strains varied between 1 and 16 micrograms (1 unit equals 1 microgram) per cubic centimeter. 2. Eighty-four per cent (243) of gram negative bacteria freshly isolated are inhibited by 16 micrograms (units) of streptomycin per cubic centimeter, while 7 per cent (20) are naturally resistant. Pseudomonas aeruginosa shows the highest incidence (15 per cent of drug fast strains. 3. The presence of body fluids increases four to eight times the tolerance to streptomycin of gram-positive cocci, while the inhibition of gram-negative bacteria is unchanged. Thus, streptomycin is less potent than penicillin on the gram-positive cocci. Penicillin resistant cocci are found to be sensitive to streptomycin and vice versa in 85 per cent of the tests. It is practicable to administer the two drugs simultaneously if warranted by the clinical and laboratory findings. These in vitro tests are done under conditions most favorable to the action of the antibiotic, that is, in mediums with a p_H of 7.8, with low salt content. If the p_H is lowered, greater amounts of streptomycin are required to effect inhibition. Results of our studies on absorption of streptomycin after intramuscular injection show that on a dosage of 0.4 Gm. every four hours a maintenance blood serum level of 16 micrograms per cubic centimeter is achieved, and at the same time twenty-four hour collections of urine assay 1,000 to 4,000 micrograms per cubic centimeter, depending on the output of urine. Thus, in translating the laboratory data to clinical factors the aforementioned factors must be borne in mind; namely, (1) the high p_H of the test mediums, (2) the protection by body fluids of the gram-positive cocci from low concentrations of streptomycin and (3) the drug levels which it is possible to deliver and maintain at the site of the lesion. We consider organisms inhibited by 16 micrograms of streptomycin per cubic centimeter as "sensitive" if the focus of infection is dependent on drug delivered by the blood stream.

DR. D. R. NICHOLS, Rochester, Minn.: In conclusion I should like to reemphasize certain points concerning the use of streptomycin. The clinical results obtained by Morgan and Hunt and by the army are very similar to the results which we have reported. Streptomycin appears to be an effective agent against certain infections. However, adequate doses must be used from the onset of treatment if the maximum clinical effect is to be achieved. Also there are a few toxic manifestations which make the drug not entirely innocuous. Certain of these toxic manifestations, particularly disturbances of the vestibular apparatus, should be regarded as indications for discontinuing the drug.

DR. HUGH J. MORGAN, Nashville, Tenn.: I was interested in Dr. Reimann's suggestion that perhaps the reason streptomycin has proved of so little value in typhoid is that the bacillus is intracellular and the agent cannot reach it. That is a likely possibility and is helpful in our present discouragement relative to typhoid. I do not agree that the sensitivity test will pass out of the picture. As long as streptomycin is in short order and if it is going to be as expensive as was indicated, I think we shall need the sensitivity test to give us some sort of crude guide as to the terms of dosage. Without them, certainly, we would be completely in the dark. I will predict that with streptomycin at $15 to $20 a gram there will be a great many infections undertreated and, as a result, there will develop a great many strains showing increased sensitivity. We shall defeat our purpose if we give too little streptomycin at the initiation of treatment.

PRESENT STATUS OF THE STUDY OF CHILD HEALTH SERVICES

JOHN P. HUBBARD, M.D.
Washington, D. C.

The Study of Child Health Services, the present status of which I wish to describe in brief and general terms, is in the broadest sense a research project which has been developed by the American Academy of Pediatrics. Its purpose is to obtain valid factual information which can serve as a basis for a program to provide better and more evenly distributed health and medical care for children. This is the same goal which has been the objective of plans for medical care programs evolving at federal, state and local levels. The goal itself is undeniably worthy and is in itself not a cause of dispute, but the methods involved have given rise to a storm of medicopolitical controversy which has clouded the fundamental issues. Such discussion has often been more heated than wise, more emotional than sound. It is obvious that there has been a need for a cool, deliberate and systematic analysis done in the scientific manner. With such thoughts in mind, the American Academy of Pediatrics, by unanimous vote of its members at an annual meeting in November 1944, committed itself "to make available to all mothers and children in the U. S. A. all essential preventive, diagnostic and curative medical services of high quality which used in cooperation with other services for children will make this country an ideal place for children to grow into responsible citizens." Before this objective can be met, information which is now lacking must be obtained. Where are medical services for children inadequate? Along what lines should improvement of these services be developed? Should more pediatricians be trained in order to fill the need or should more pediatric training be given to general practitioners? Answers to these and many other fundamental questions should be based first on an evaluation of existing conditions. Present knowledge of these conditions is incomplete, scattered and in some fields almost totally lacking.

How should the necessary data be collected? The answer of the Academy to this question is unique. The physicians who are engaged in rendering medical care are the ones best qualified to obtain the needed data and to state what constitutes good medical care. In fact, the responsibility for improving medical services rests on the physicians themselves. Since, therefore, this is a study developed and conducted by physicians, it is natural that it should follow the logical method which the medical profession habitually uses, whether in the case of an individual physician making a difficult diagnosis or in the solution of an obscure research problem. First the facts must be gathered and evaluated, without bias or prejudice; then, and

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then only, can it be decided what should be done about them. It is in accordance with these principles that this study has been organized and is being conducted in every state by the medical profession itself, in order to determine what services are now available and so far as possible to evaluate the quality of those services.

In more specific terms, detailed information is being sought from all hospitals and medical institutions which have beds for children: general, pediatric and maternity hospitals, and also special hospitals, such as convalescent homes, tuberculosis sanatoriums, orthopedic hospitals, contagious disease hospitals and institutions for nervous and mental diseases. The study covers the extent and quality of community health services, both official and voluntary, such as child health conferences, school health service, child guidance clinics, immunization programs and public health nursing. Data are being collected from all pediatricians, general practitioners and specialists who care for children.

This information is being sought in every community throughout the country by the use of questionnaires which were developed with great care and which were tested in a pilot study in North Carolina before being widely distributed over the rest of the country. Many physicians have already received their questionnaires and are undoubtedly familiar with them. The questionnaire for the general practitioner is a simple one page form which can be completed in a few minutes. Since this is primarily a pediatric study, the pediatricians' questionnaire is somewhat more elaborate. One question on the form to be filled in by the general practitioner has been a source of considerable confusion; hence a word of explanation is appropriate. We wish to determine the size of the case load of physicians in a specific area. For this purpose each physician is requested to fill in a record for one specified day. This is not being asked in order to determine the size of the practice of individual physicians, but, rather, to determine the over-all picture of medical activities in one area over a representative period of time. The day for which this information is desired is determined in advance so that no physician is allowed to choose his own day. If each physician were left to choose the one day on which he wished to report, the chances are, human nature being what it is, that he would choose his busiest day. The results would obviously not give a true picture of the normal amount of medical service rendered. Therefore, in order to take into account the atypical as well as the typical days, each physician is asked to report for a specified day. Thus, supposing that there are seven hundred physicians practicing in a certain city, when the questionnaires are sent out one hundred of them are marked "Monday," another hundred "Tuesday," and so on throughout the entire week. By this method one seventh of all the physicians will report for each day of the week. The identity of any one physician thus becomes lost in the over-all picture, so that no one need worry if he is asked to report for Sunday or perhaps for a day when he happens to be attending a meeting.

Another point which should be emphasized is the fact that these questionnaires will be kept confidential, so that no information from any institution or physician which might serve to identify the individual will fall into other hands. Furthermore, in the process of statistical tabulation the identity of a physician or hospital will be deeply buried.

Appreciating the broad scope of the study and the voluminous mass of data to be collected, the Academy of Pediatrics requested and received active cooperation from the United States Public Health Service and the United States Children's Bureau, particularly in relation to the statistical analyses involved. Thus, at the national level an effective and happy working relationship has been established between an organized group of practicing physicians and these two federal agencies for the attainment of their common ends. But I wish to emphasize that this does not mean that the study is a government project; it definitely is *not* a government project. The director is paid by and answerable to the Academy of Pediatrics. The personnel who are on loan from the government agencies are under his direction. The responsibility for the success of the undertaking is in the hands of the Academy. Chart 1 demonstrates the national organization, showing the American Academy of Pediatrics directing the study with the cooperation of the United States Public Health Service and the Children's Bureau. A subcommittee of the Academy has been appointed for

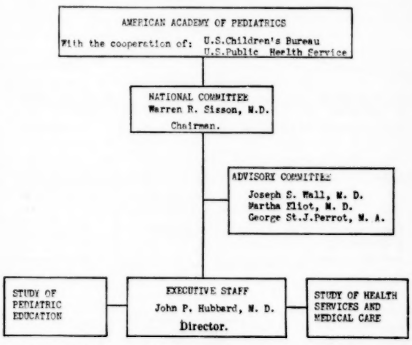

Chart 1.—Study of Child Health Services, national organization.

the Study of Child Health Services. This committee, of which Dr. Warren R. Sisson of Boston is chairman, is made up of nine members, all of whom are active in either the teaching or the practice of pediatrics. The technical Advisory Committee has been formed with one representative from the Academy, one from the Children's Bureau and one from the United States Public Health Service. The Central Executive Staff, which now numbers twenty-two, is responsible for the organization and conduct of the study and for compiling a factual report of the information which is being obtained from the states.

In order that the desired information may be obtained from every community throughout the country, state chairmen of the Academy of Pediatrics have been given the responsibility of organizing state programs (chart 2). It is the function of the state chairmen to appoint the full time executive secretaries to supervise the state offices and to establish at the outset suitable contact with state medical societies, state pediatric groups, state health departments and other state organizations concerned with the health and welfare of children. Furthermore, since the ultimate responsibility rests on the pediatricians who originally evolved

this plan, they are not only filling out the questionnaire relating to their own practice but are assisting in obtaining information from general practitioners in private practice and from hospitals.

The extent to which this study has already been successful is demonstrated by the support it has received at both national and state level. At the national level it has been endorsed by the American Medical Association, as indicated in an editorial appearing in the May 4 issue of THE JOURNAL.[1] Its general purpose has also been endorsed by the American Dental Association, the American Society of Dentistry for Children and the National Tuberculosis Association. Furthermore, financial support has been received from the National Foundation for Infantile Paralysis, the Field Foundation and commercial houses which are active in the pediatric field.

At the state level the progress has been remarkable. In only four months since the state programs were initiated, executive secretaries have been appointed in forty-two states and the District of Columbia. Of this

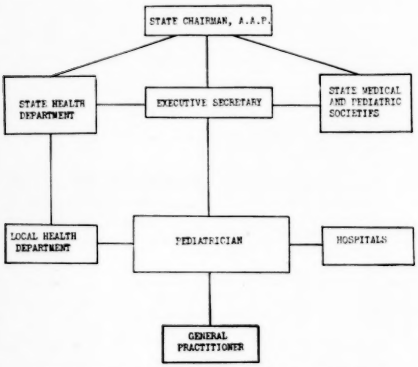

Chart 2.—Study of Child Health Services, state organization.

number, twenty-seven are physicians, twenty-four of whom are pediatricians. These state programs are being financed independently from within their own boundaries, with the help of county chapters of the National Foundation for Infantile Paralysis, state health departments, state medical and pediatric societies, local foundations and commercial houses. Endorsement has been received from forty-four state medical societies, twenty-six state dental societies and forty-four state departments of health. Except in a mere half dozen states which have not yet succeeded in launching their programs, the questionnaire forms are now being distributed and collected. This is tangible evidence of the credit due to state chairmen, executive secretaries and their many co-workers who have accepted the challenge to develop the Study of Child Health Services into a thorough fact-finding project at all possible speed. Several states have already reported completion of the distribution of questionnaires to professional personnel in private practice. Schedules or questionnaires for public and private community health services are now in the hands of their respective recipients in a number of states. Distribution of the hospital questionnaires varies in the different states. Where possible we have attempted to integrate our study with the survey now in progress under the auspices of the Commission on Hospital Care so that there will be no duplication of effort and so that the required information of a pediatric nature will be in the form of a supplement to the more elaborate Hospital Commission questionnaire.

A special portion of the study which does not lend itself to a breakdown at the state level, and is therefore being conducted on a national basis, will concern itself with the extent and character of pediatric training being given by medical schools. A study of the education of physicians in pediatrics, both general practitioners and specialists, is considered basic to any study concerned with the health of children. Therefore a further subcommittee has been appointed under the chairmanship of Dr. James L. Wilson, Professor of Pediatrics at the University of Michigan, which includes the chiefs of pediatric departments of medical schools representing various sections of the country. This group is now planning a study to evaluate the level of pediatric education in medical schools, teaching hospitals and postgraduate courses.

When this material is all collected it will be gathered in the Central Office, where it will be analyzed by approved statistical methods by experienced and expert statisticians. We shall then have the information needed for a factual evaluation of the quantity, and we hope also the quality, of health services available for the children of this country. This information will be presented in an over-all national report which will be prepared by the Central Executive Staff under the direction of the committee appointed by the Academy. In addition, it becomes increasingly apparent that of equal, or perhaps greater importance than the report at the national level, will be reports written at the state level by those who have been actively engaged in the conduct of the state studies. For this purpose we shall submit to state chairmen tabulated material broken down to the level of counties and of cities of 10,000 or more population. It is anticipated that this material will be in sufficient detail to enable groups interested in the health and medical care of children at the local level to evaluate their own services in order that they may take steps to improve them.

Much confusion will be avoided if it is kept clearly in mind that this study is to be considered as only the first step toward the original objective of the Academy. Only after the facts are in hand can a fair estimate be made of the interpretations and opinions that may arise from them. This vast undertaking is costing a great deal of money and involving efforts of a great many persons. It is obvious that unless the information derived from it is used as the basis for an action program the objective will not be reached and the whole program will be sterile. When this Study of Child Health Services is successfully concluded it then becomes a further responsibility of the American Academy of Pediatrics to develop a program which, I repeat, is intended "to make available to all mothers and children in the U. S. A. all essential preventive, diagnostic and curative medical services of high quality which, used in cooperation with other services, will make this country an ideal place for children to grow into responsible citizens."

1. The American Academy of Pediatrics Study of Child Health Services, editorial, J. A. M. A. **131**: 32 (May 4) 1946.

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ABSTRACT OF DISCUSSION

DR. GEORGE M. WHEATLEY, New York: I am glad to have the opportunity to discuss this important study of child health service. In New York State we had the problem of many facilities, many physicians, great distances. Also there are two state chairmen, which necessitated a more complex organization scheme than was necessary in states with one chairman. For these reasons we had to depart from the pattern followed in most of the other states where there is but one state chairman for the administration of the study. We have organized a directing committee of four members of the Academy. The chairman of that directing committee is Dr. Paul Beaven of Rochester, with Dr. William Orr of Buffalo, Dr. Fred Wilke of New York City and myself as the director of the state study. This group represents the Academy of Pediatrics, and the director acts as the executive officer for the committee. We have divided the state into two broad regions, one centered in New York City, including Long Island and seven counties; the other area is the rest of the state, which includes the four other principal cities: Albany, Syracuse, Rochester and Buffalo. Each of the two areas has an advisory committee. In each of the five principal cities we have a local study committee representing the Academy and the state medical society. I want to emphasize the state medical society's part. We have proceeded in New York State on the principle that our information will be collected through the facilities of the state and local medical societies. We have found that the progress of the study has been greatly facilitated by the use of these channels. As a matter of fact the state medical society's subcommittee on child health is actually a part of our study of organization, because in each of the five key areas we have representatives of that subcommittee on the study committee. An essential but difficult part of our problem was to find all the hospitals that should receive this questionnaire. We have been fortunate in having our hospital schedules distributed in the upstate region by the Joint Hospital Board, which is currently making a survey of all hospitals under the direction of Dr. John J. Bourke. Similarly, in the New York City area our schedules have been distributed by the Hospital Council of Greater New York, which is conducting a hospital survey under the direction of Dr. John B. Pastore. The most important aspect of this study concerns the physicians. We have about 27,000 physicians other than pediatricians that have to be reached in New York State. You can appreciate the magnitude of this problem. Postage is a major part of our budget. The state and local medical societies have been most helpful. I wish to leave you with this thought: We are all in this together. It is not simply pediatricians but all physicians who must cooperate if we are to get the facts and put this project over.

DR. CRAWFORD BOST, San Francisco: I wish to emphasize some of the points that both Dr. Hubbard and Dr. Wheatley have brought out. First, this is a study of existing child health facilities to be done by the practicing physicians themselves, in their own communities; and though it sounds complicated as we present it, it is actually simple, thanks to the brilliant help at the central office and the planning that has preceded the state studies. The part to be played by the pediatrician and the practitioner is just to fill out a schedule, which will be sent to them with the full directions but which schedule will be further explained to them if they want any further explanation. This is an opportunity for practicing physicians to do a job which will give us leadership in future health plans as far as child care is concerned. If we can gather the data as we hope to, with good cooperation from all pediatricians and from all practicing physicians, there isn't any question that we can return to the local community data which will assure us the leadership and future planning for child care. I would emphasize another thing which both speakers have stressed: At present we get a hundred per cent cooperation from voluntary agencies everywhere, and from all of the official agencies dealing with child health. Now in order to strike a proper balance, we must get a hundred per cent help from our practitioners. Certainly we can do that. Following this we shall have figures of value for local areas. The third point that I would like to make is that data gathered in any particular area will be returned for use in that particular area.

DR. H. E. THELANDER, San Francisco: During the month of May I toured the six Western states in the interest of the study. The tour took me through sparsely populated areas as well as urban communities abnormally congested by wartime migrations. I saw, therefore, almost a recapitulation of the development of modern medicine and public health. In sparsely populated areas a great deal of the public health work still devolves on the practicing physician. It is a burden which he carries reluctantly, and he looks toward the day when the community will be served by a full time public health officer. In these areas the study most often was being done jointly by the private pediatricians and the health officers and was financed jointly by public and private funds. In the large cosmopolitan centers, on the other hand, the private pediatrician and the public health officer had become so widely separated that they scarcely knew each other, and sometimes they were suspicious of each other's motives. In these cities the study was usually being conducted by practicing physicians with the aid of funds from private sources. It is sincerely hoped that one of the results of the study will be the reestablishment of a realistic cooperation between private physicians and public health workers, with the sphere of influence of each so defined that all children will be adequately served.

Clinical Notes, Suggestions and New Instruments

SUBACUTE BACTERIAL ENDOCARDITIS DUE TO GRAM NEGATIVE ORGANISMS

THOMAS H. HUNTER, M.D.
and
RICHARD B. DUANE Jr., M.D.
New York

Since the advent of the newer antibiotics there has appeared a multitude of articles on the treatment of subacute bacterial endocarditis. Dealing almost exclusively with the penicillin therapy of streptococcic infections, these articles [1] reemphasize the statistics of many authorities [2] who point out that from 90 to 95 per cent of all cases are due to this group of organisms. Among the remaining small percentage, however, it is noted that the Hemophilus influenzae group has been frequently incriminated. Indeed, Thayer [3] estimated that 2.5 per cent of all cases are caused by this group, although others believe this figure to be too high.[4]

The streptomycin was provided by Dr. J. M. Carlisle of Merck & Co., Rahway, N. J.

From the Presbyterian Hospital and the Department of Medicine, Columbia University College of Physicians and Surgeons.

1. Loewe, L.; Rosenblatt, P.; Greene, H. J., and Russell, M.: Combined Penicillin and Heparin Therapy of Subacute Bacterial Endocarditis, J. A. M. A. **124:** 144 (Jan. 15) 1944. Kelson, S. R.: Observations on the Treatment of Subacute Bacterial Endocarditis Since 1939, Ann. Int. Med. **22:** 75 (Jan.) 1945. Dawson, M. H., and Hunter, T. H.: The Treatment of Subacute Bacterial Endocarditis with Penicillin, J. A. M. A. **127:** 129 (Jan. 20) 1945. Bloomfield, A. L.; Armstrong, C. D., and Kirby, W. M. M.: Treatment of Subacute Bacterial Endocarditis with Penicillin, J. Clin. Investigation **24:** 251 (May) 1945. Flippen, H. F.; Mayock, R. L.; Murphy, R. D., and Wolferth, C. C.: Penicillin in the Treatment of Subacute Bacterial Endocarditis, J. A. M. A. **129:** 841 (Nov. 24) 1945. Loewe, L.: The Combined Use of Anti-Infectives and Anticoagulants in the Treatment of Subacute Bacterial Endocarditis, Bull. New York Acad. Med. **21:** 59 (Feb.) 1945. Goerner, J. R.; Geiger, A. J., and Blake, F. G.: Treatment of Subacute Bacterial Endocarditis with Penicillin: Report of Cases Treated Without Anticoagulant Agents, Ann. Int. Med. **23:** 491 (Oct.) 1945.

2. Blumer, G.: Subacute Bacterial Endocarditis, Medicine **2:** 105 (May) 1923. Libman, E., and Friedberg, C. K.: Subacute Bacterial Endocarditis, New York, Oxford University Press, 1941. Thayer.[3]

3. Thayer, W. S.: Bacterial or Infective Endocarditis, Edinburgh M. J. **38:** 237 (April), 307 (May) 1931.

4. Rose, H. M.: Hemophilus Influenzae Type A Endocarditis, Am. J. M. Sc. **202:** 187 (Aug.) 1941.

In reviewing the literature since the introduction of the sulfonamide compounds we have found reports of only 4 cases of H. influenzae endocarditis, and considerable discrepancy is noted in the results obtained with this group of drugs. Rose [4] and Craven and his associates [5] were unable to influence the course of the disease, but Lichtman [6] reports 2 cases apparently cured by the use of sulfonamides. The following case lends support to the observation that sulfonamides may be effective in the treatment of H. influenzae endocarditis:

CASE 1.—A. P., a white woman aged 46, American, a housewife, was admitted to the Presbyterian Hospital on Nov. 16, 1944 for an illness of seven weeks' duration. This had begun as a simple upper respiratory infection and was characterized by recurrent shaking chills, progressive weakness, generalized aches and pains, and temperatures as high as 104 F. During the illness, which was not influenced by symptomatic treatment, by succinylsulfathiazole for one week or by sulfadiazine for two weeks, she developed a transitory painful swelling of one finger, an episode of slowly subsiding left pleuritic pain, and many scattered petechiae noted by examining physicians.

With the exception of many severe sore throats in childhood, she denied all symptoms of rheumatic fever, she had never been told of a heart murmur, and there had been no recent dental extractions or other trauma.

Physical examination revealed that the patient was thin and pale, was acutely and chronically ill, and had many scattered petechiae over the entire thorax, in the conjunctivas and hard palate, and many "splinter hemorrhages" under each nail. The lungs were clear. The heart showed normal sinus rhythm and the classic stigmas of mitral stenosis and insufficiency. There was no evidence of myocardial insufficiency. The spleen was not palpable.

Laboratory examination showed hemoglobin of 10 Gm., a red blood cell count of 3,690,000, a white blood cell count of 17,300, with polymorphonuclears 89 per cent and lymphocytes 11 per cent and a sedimentation rate of 43 mm. after one hour. Urinalysis, electrocardiogram and chest x-ray were within normal limits.

During her initial examination the patient passed an embolus to the left femoral artery, with the development of diminished temperature and loss of arterial pulsation and of sensory perception below the knee. Vigorous treatment, i. e. lumbar sympathetic block, heparin, papaverine and cold packs, was instituted with the result that four days later sensation and femoral pulsation had returned. Thereafter the leg improved steadily, causing no further trouble.

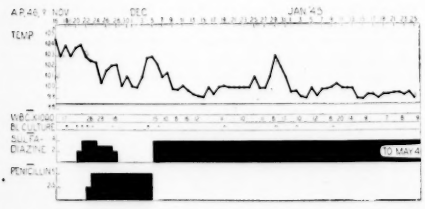

Chart 1.—Course in case 1.

By the end of the fourth hospital day the clinical diagnosis of subacute bacterial endocarditis appeared unequivocal, and although no organism had been isolated from blood cultures it was considered unwise, in view of her condition, to delay therapy. Consequently she was started on sulfadiazine 4 Gm. daily (1 Gm. every six hours) by mouth and two days later on penicillin 500,000 units a day by continuous intramuscular drip. On this combined therapy she showed clinical improvement, and sulfadiazine was discontinued after eight days. Three days later, after eleven days on penicillin, her temperature, which had reached nearly normal levels, started rising, and at the same time a gram negative organism was recovered from the intial four blood cultures after an incubation of nineteen days. This was identified as Hemophilus parainfluenzae and proved to be extremely resistant to penicillin in vitro, being only $\frac{1}{78,200}$

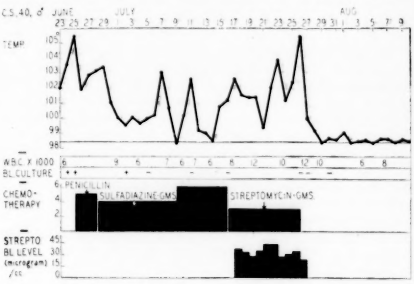

Chart 2.—Course in case 2.

as sensitive as the standard test organism, hemolytic streptococcus C203Mv.[7] It was, however, sensitive to sulfadiazine in vitro at the ordinary therapeutic concentrations.[8] Therefore penicillin was discontinued and sulfadiazine 4 Gm. daily (1 Gm. every six hours) was started. This dosage maintained blood levels between 7 and 10 mg. per hundred cubic centimeters and no symptoms or signs of toxicity were noted. The patient's temperature again fell to a nearly normal range, and clinical improvement was evident. The remainder of her hospitalization was uneventful save for a mild and transient localized thrombophlebitis and a rapidly subsiding episode of left flank pain, interpreted as splenic infarction. She was discharged home, ambulatory, after fifty days on sulfadiazine and continued on the same dosage at home for a total of five months. At present, ten months after cessation of sulfadiazine therapy, she is the picture of health, has gained 30 pounds (13.6 Kg.) and has remained afebrile, while all blood cultures taken since the institution of sulfonamide therapy have remained sterile.

It is, of course, well known that penicillin is ineffective in the treatment of gram negative bacillary infections [9] and that the sulfonamides only partially fill the therapeutic gap. In 1944 announcement was made of a new antibiotic agent, streptomycin,[10] which has given promising results in the treatment of infections due to certain gram negative organisms.[11] The limited supply of this material has restricted extensive clinical investigation and no mention of its effectiveness in the control of gram negative endocardial infections has appeared in the literature. The following report describes a case of

5. Craven, E. B., Jr.; Poston, M. A., and Orgain, E. S.: Hemophilus Parainfluenzae Endocarditis: Report of 2 Cases and Review of Literature of Influenzal Endocarditis, Am. Heart J. **19:** 434 (April) 1940.

6. Lichtman, S. S.: Treatment of Subacute Bacterial Endocarditis: Current Results, Ann. Int. Med. **19:** 787 (Nov.) 1943.

7. Dawson, M. H.; Hobby, G. L., and Lipman, M. O.: Penicillin Sensitivity of Strains of Nonhemolytic Streptococci Isolated from Cases of Subacute Bacterial Endocarditis, Proc. Soc. Exper. Biol. & Med. **50:** 101 (June) 1944.

8. Hobby, G. L.: Personal communication to the authors.

9. Fleming A.: On the Antibacterial Action of Cultures of Penicillium, with Special Reference to Their Use in Isolation of B. Influenzae, Brit. J. Exper. Path. **10:** 226 (June) 1929. Keefer, C. S.; Herwick, R. P.; VanWinkle, W., Jr., and Putnam, L. E.: New Dosage Forms of Penicillin, J. A. M. A. **128:** 1161 (Aug. 18) 1945.

10. Schatz, A.; Bugie, E., and Waksman, S. A.: Streptomycin, a Substance Exhibiting Antibiotic Activity Against Gram Positive and Gram Negative Bacteria, Proc. Soc. Exper. Biol. & Med. **55:** 66 (Jan.) 1944. Waksman, S. A.; Bugie, E., and Schatz, A.: Isolation of Antibiotic Substances from Soil Micro-Organisms, with Special Reference to Streptothricin and Streptomycin, Proc. Staff Meet., Mayo Clin. **19:** 537 (Nov. 15) 1944.

11. Heilman, F. R.: Streptomycin in the Treatment of Experimental Tularemia, Proc. Staff Meet., Mayo Clin. **19:** 553 (Nov. 29) 1944. Jones, D.; Metzger, H. J.; Schatz, A., and Waksman, S. A.: Control of Gram Negative Bacteria in Experimental Animals by Streptomycin, Science **100:** 103 (Aug. 4) 1944. Herrell, W. E., and Nichols, D. R.: The Clinical Use of Streptomycin: A Study of 45 Cases, Proc. Staff Meet., Mayo Clin. **20:** 449 (Nov. 28) 1945.

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subacute bacterial endocarditis in which streptomycin may well have been the deciding factor in terminating the infection:

CASE 2.—C. S., a white man aged 40, American born, a mechanic, with known rheumatic cardiac involvement, was admitted on June 23, 1945 to the Presbyterian Hospital complaining of three weeks of intermittent chills and fever following a simple upper respiratory infection. During the illness, which had not been appreciably influenced by sulfonamides, his temperature had ranged between 101 and 104 F. and there had been an episode of painful swelling of one toe, as well as a period of left pleuritic pain, both of which cleared spontaneously. Physical examination revealed that the patient, who was well developed, was moderately acutely ill, with one conjunctival petechiae, a small ecchymotic area on the ball of one toe and an enlarged heart with classic signs of mitral and aortic valvular lesions, but without evidence of cardiac insufficiency. The spleen was not palpable. Laboratory examination showed a hemoglobin of 14 Gm., red blood cell count of 3,950,000, white blood cell count of 5,600, polymorphonuclears 84 per cent, lymphocytes 16 per cent and sedimentation rate 92 mm. after one hour. The urinalysis was within normal limits. An electrocardiogram showed nonspecific myocardial damage, and a chest x-ray confirmed the clinically evident cardiac enlargement.

There appeared little doubt that the patient was suffering from subacute bacterial endocarditis, and because of the severity of his illness he was started on penicillin X 500,000 units a day by continuous intramuscular drip, although the blood cultures had shown no growth. After three days there had been some subjective improvement and the fever had subsided somewhat, but at this point a small gram negative organism was recovered from the initial two blood cultures. Therefore penicillin was discontinued and sulfadiazine substituted.

The organism was a small gram negative bacillus but proved to have characteristics placing it outside the commonly known genera, resembling neither Brucella, Hemophilus, Pasteurella, Pfeifferella or Bacteriodes. Persistently found in the patient's blood cultures, it was undoubtedly responsible for the endocarditis, and the patient was shown to have developed an appreciable agglutinin titer to the organism,[12] which was found to be only one fortieth as sensitive to penicillin in vitro as the standard test organism.[7] It was only slightly sensitive to sulfadiazine in vitro.[8]

On sulfadiazine 4 to 6 Gm. a day and running blood levels of from 6 to 10 mg. per hundred cubic centimeters, the patient showed slow symptomatic improvement but remained febrile and on July 7 developed a small renal infarct, with pain and microscopic hematuria, although all blood cultures taken after the first week remained sterile. After further investigation the organism was found to be moderately sensitive to streptomycin in vitro, 3.75 micrograms per cubic centimeter being the bactericidal level. Accordingly a ten day course of 3 Gm. of the drug per day was given by continuous intramuscular drip, streptomycin blood levels, taken daily, averaging 35 micrograms per cubic centimeter.[8] During this treatment there was a moderate systemic reaction, the patient complaining of headache, diaphoresis and pain at the site of injection. Objectively he had a septic temperature, diaphoresed profusely, showed a 20 mm. drop in blood pressure and developed a mild leukocytosis. Within forty-eight hours of the completion of the course, however, all symptoms other than pain at the injection sites had subsided and his temperature returned to normal, never thereafter exceeding 99 F. during the remainder of his hospitalization and convalescence. At present, nine months after discharge from the hospital, the patient appears in excellent health and has returned to full time work. The sedimentation rate is normal, and frequently repeated blood cultures have remained sterile.

COMMENT

Illustrating the clinical similarity of cases of subacute bacterial endocarditis, regardless of the infecting organism, these two cases emphasize the necessity for accurate bacteriologic study. While it is obvious that cases such as these are exceptions, hope for successful treatment depends not only on the accurate identification of the organism but also on the determination of its sensitivity in vitro to the chemotherapeutic agents available. This has been demonstrated in the penicillin therapy of streptococcic endocarditis, and inadequate treatment has been shown to increase the resistance of the organism to the drug employed in some instances.

An unusual feature of the first case was the long incubation period, nineteen days, necessary for growth of the organism. Previously unreported in Hemophilus influenzae endocarditis, this affirms that cultures should not be called sterile until a considerable period of incubation has elapsed. On further consideration of this case and of the reported cures,[6] it is noted that in each of the 3 administration of sulfonamides was continued over a long period and that in the reported failures [13] the therapeutic trial was relatively short. This suggests that in certain cases the duration of treatment as well as the choice of drug is of importance. Further evidence of this is the fever, which persisted well into the sixth week of treatment in spite of sterile blood cultures.

The second case, caused by an unusual gram negative bacillus, appears to have responded well to streptomycin. Unfortunately, since the three blood cultures taken just prior to treatment remained sterile, it cannot be proved that this material alone was responsible for cure. It seems unlikely however that sulfadiazine was the deciding factor, for the organism was relatively resistant to this drug in vitro and a previous trial had been unsuccessful. Recent studies [14] have indicated that streptomycin may be effective in the control of infections due to H. influenzae, and, should further investigation corroborate this, the treatment of endocarditis due to this and to other gram negative organisms may be greatly simplified.

12. Kinsella, R. A.: Bacteriologic Studies in Subacute Streptococcus Endocarditis, Arch. Int. Med. **19**: 367 (March) 1917.

13. Rose.[4] Craven, Poston and Orgain.[5]

14. Anderson, D. G., and Jewell, M.: The Absorption, Excretion and Toxicity of Streptomycin in Man. New England J. Med. **233**: 485 (Oct. 25) 1945. Alexander, H., and Leidy, G.: Science, to be published. Herrell and Nichols.[11]

PRESSURE DRESSINGS FOR THE PREVENTION AND TREATMENT OF THROMBOEMBOLISM

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Los Angeles

Prevention and treatment of thromboembolism has to be directed toward two main goals: (1) prevention of formation of primary and secondary thrombi and (2) prevention of mobilization of a locally formed thrombus causing embolism. Prevention of thrombus formation can be achieved by modern anticoagulants such as heparin or Dicumarol (3,3'-methylene-bis-[4-hydroxycoumarin]). However, once the thrombus has formed, attention has to concentrate toward preventing the formed thrombus from being broken off and carried into the circulation. This obviously is a mechanical problem and can be solved either by interruption of the continuity of the vein above the thrombus or by prevention of mobilization of the thrombus from its venous bed.

Linton and Chapman [1] have recently discussed the importance of intravenous pressure (Valsalva's experiment) in the production of pulmonary embolism. In the Valsalva experiment, in sudden straining and in the act of defecation there occurs an impediment of venous return with rise in intravenous pressure and distention of the peripheral veins. Such a distention may, in presence of thrombophlebitis or phlebothrombosis, lessen the grip of the vein wall on an insecurely attached secondary thrombus (fig. 1). With the drop of venous pressure during the next inspiration, the dammed venous blood is suddenly emptied toward the right side of the heart, carrying along loosened thrombi.

From the Division of Surgery, Cedars of Lebanon Hospital.

1. Chapman, Earle M., and Linton, Robert R.: Mode of Production of Pulmonary Emboli, J. A. M. A. **129**: 3 (Sept. 15) 1945.

Such a concept has led to the use of well fitted leg dressings [2] with the purpose of preventing pulmonary embolism. At one time I made well over a hundred dressings of Unna paste (so-called Unna boot) applied with moderate pressure from toes to groin. Well fitted dressings with cotton and adhesive tape are also applicable.

Figure 2 shows the mode of action of these dressings, intended to make a sudden distention of the veins of the calf

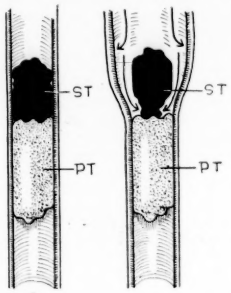

Fig. 1.—*A*, primary thrombus (PT), secondary thrombus (ST); *B*, effect of increased intravenous pressure on loosening of the secondary thrombus.

or leg impossible, thus preventing loosening of the local thrombus.

It appears that, in spite of modern therapeutic measures, such as femoral vein ligations and therapy with anticoagulants, this simple and innocuous method deserves further trial.

The indications for this procedure are:

1. Routine prophylactic application of bandages before surgery, such as before pelvic surgery, in obese and cardiac patients, and in patients with a history of previous thrombophlebitis or embolism.

2. This method combined with anticoagulant therapy for patients with clinical evidence of thrombophlebitis, phlebothrombosis, or pulmonary embolism.

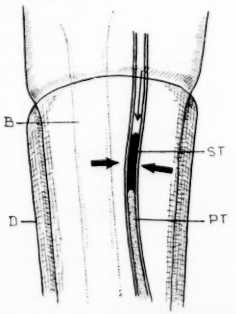

Fig. 2.—Pressure dressing (*D*) applied to avoid distention of vein and prevent loosening of thrombus.

CONCLUSION

Pressure dressings from toes to groin are an addition to our armamentarium for the prevention and treatment of pulmonary embolism.

2007 Wilshire Boulevard, Los Angeles 5.

2. Friedländer, E.: Anatomische Grundlagen zur Behandlung der Beckenvenen- und Femoralisthrombose, Wien. klin. Wchnschr. **49:** 1067 (Aug. 28) 1936.

BENADRYL, A CONTRIBUTING CAUSE OF AN ACCIDENT

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Associate Medical Director, Eastman Kodak Company
and
NATHAN FRANCIS, M.D.
Rochester, N. Y.

While it is recognized that benadryl is a very effective agent in the treatment of urticaria and in the control of pruritus in allergic dermatosis, it exhibits a common side reaction, drowsiness, in more than half of the patients taking it. This drowsiness is usually mild, but some patients report that they slept as long as eighteen hours after taking only 50 mg. of Benadryl.[1] When the dose is reduced to 10 or 20 mg. it is better tolerated and the side reactions, if they occur, are diminished. Levin,[1] using 50 to 100 mg. of benadryl every four to six hours in his series of 400 cases, enumerated twenty-four different side reactions, with drowsiness occurring in 60 per cent of his cases. Waldbott,[2] in his series of 165 cases, and using six doses of 50 mg. each, reported 81 cases of drowsiness. Schwartz [3] reported 20 cases of drowsiness in his 50 cases treated with benadryl.

In our series of 65 cases, drowsiness has been a common symptom twenty-five times. This figure should be increased somewhat, as many of our patients were instructed to take the drug only at bedtime. Invariably they reported that they slept better than usual. Drowsiness may occur from one to three hours after taking benadryl, and this drowsiness may be cumulative if the drug is continued.

Because of this narcotic side reaction incident to the taking of benadryl, the drug may be a serious hazard when used by persons operating automobiles or in industry operating moving equipment or machinery, as illustrated in the case reported here:

REPORT OF CASE

M. F. B., a man aged 20, has had hay fever for the past three years. His symptoms begin the first part of June and end the middle of July. He has had no previous treatment. He was seen for the first time on June 12, 1946 with typical hay fever symptoms, which included red and congested eyes and a plugged and discharging nose, accompanied by a great amount of sneezing and itching. Since he had had no treatment, it was thought that he would be a good subject for benadryl study.

He was given a 50 mg. capsule to be taken at 4 in the morning the following day, since that was the time of day when he had his most severe symptoms. However, he did not take the benadryl until 8 a. m. on June 13. He thought that he was partially relieved from his hay fever symptoms an hour later. There was no side reaction. The following day, June 14, the patient took another capsule of benadryl at 7 a. m. He started to work at 8 o'clock and said that he felt drowsy. At 9 o'clock, an hour after he began to work, in the act of driving an electric platform cargo truck, he lost control of the truck and it fell off the platform. Fortunately the patient jumped off before the vehicle went off the platform. Therefore he was not injured. The truck, however, was wrecked.

When first seen the patient was sitting on a packing case "crying and shaking like a leaf." He was unable to talk because of his experience, but he did not appear drowsy. He walked to the company car and was driven to the Medical Department. Here he was given ¼ grain (15 mg.) of phenobarbital and put to bed. He slept soundly for the next two hours.

From the Medical Department, Eastman Kodak Company.

1. Levin, S. J.: B-Dimethylaminoethyl Benzhydryl Ether Hydrochloride (Benadryl): Its Use in Allergic Diseases, J. Allergy **17:** 145 (May) 1946.

2. Waldbott, G. L.: Clinical Results with Benadryl, J. Allergy **17:** 142 (May) 1946.

3. Schwartz, E., and Levin, L.: Benzhydryl Ether Hydrochloride (Benadryl) in Symptomatic Treatment of Allergy, New York State J. Med. **46:** 1233 (June 1) 1946.

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SUMMARY

While there is no specific evidence that the narcotic side action of benadryl was involved in the accident, it may have been a contributing factor. Because of the potential danger to persons operating automobiles or workers in industry operating moving equipment and machinery while using benadryl, we feel justified in reporting this case.

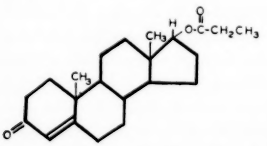
Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., *Secretary.*

TESTOSTERONE PROPIONATE.—The propionic acid ester of testosterone.—Δ4-androsten-17[α]-propionate-3-one.—$C_{22}H_{32}O_3$.—M. W. 344.48.—Testosterone propionate possesses androgenic properties. It may be prepared synthetically from cholesterol as the starting material or from testosterone isolated from bull testes. The structural formula of testosterone propionate may be represented as follows:



Actions and Uses.—Testosterone propionate is primarily useful to supply testicular hormone for the treatment of deficiency or absence of this internal secretion of the male. It may therefore be of value in the treatment of prepuberal and postpuberal eunuchoidism or hypogonadism (deficiency states) and in postcastration and eunuchism (absence of testicles). In the latter instances treatment must be regarded as replacement therapy and is of benefit only as long as it is continued.

Its use in eunuchoidism is intended to promote prepuberal development of primary and secondary sexual characteristics or to relieve postpuberal constitutional symptoms attributable to deficient secretion. In the treatment of constitutional symptoms in young males it should be borne in mind that less is usually needed to obtain relief than the amount required to promote pubescence and development of infantile genitalia, and that it is unwise to stimulate full sexual maturity in youths who are psychologically and otherwise physically unprepared for adult life. In eunuchoidism not due to primary testicular hypoplasia, efforts to eliminate secondary etiologic factors should take precedence over the use of androgens.

In adults, hypogonadism (functional deficiency) manifested by constitutional symptoms and effeminacy without striking anatomic changes, symptomatic improvement may follow androgenic therapy. Atrophy of accessory male structures that follows castration or is associated with eunuchism may also be effectively prevented or these organs restored to normal and maintained by continuous substitution therapy.

The use of androgens in the treatment of other conditions such as cryptorchism, the "male climacteric," angina pectoris, ovarian dysfunction (functional uterine bleeding), dysmenorrhea and other gynecologic conditions is experimental and cannot be recognized until more conclusive evidence becomes available.

Dosage.—Testosterone propionate is administered intramuscularly in doses ranging from 5 to 50 mg. from two to six times weekly, depending on the response obtained. To induce pubescence in eunuchoidism, 10 mg., increased as indicated to 25 mg. three times weekly, may be employed over a period of several weeks. To relieve constitutional symptoms as little as 5 mg. at similar intervals may be sufficient. Depending on the condition and the effect desired, the maintainence dose must be determined in each individual case. Priapism is indicative of excessive dosage, and its production is an indication for temporary withdrawal of the drug. Caution is also necessary to avoid precocious sexual development in young boys. Its indiscriminate use should be guarded against, since the drug may produce irreversible masculinizing phenomena in the female. Testosterone propionate has a standard potency of 50 international capon units per milligram and is usually dissolved in oil for intramuscular injection.

Tests and Standards.—

Testosterone propionate occurs as an odorless, white to pale yellow, crystalline powder. It is insoluble in water but soluble in organic solvents such as alcohol, chloroform and ether; it may be dissolved in vegetable oils. Testosterone propionate melts between 118 and 122 C.

The specific rotation of a solution containing 10 mg. of testosterone propionate per cubic centimeter in anhydrous methanol, measured in a 10 cm. tube, is $[\alpha]_D^{25} = +86$ (± 2.0) degrees. Testosterone propionate exhibits ultraviolet light absorption maxima at 2,410 A. U. ($E\ \frac{1\%}{1\ cm.} = 480$) and at 3,080 A. U. ($E\ \frac{1\%}{1\ cm.} = 2.35$), when dissolved in 95 per cent ethanol; at 2,310 A. U. ($E\ \frac{1\%}{1\ cm.} = 540$) and 3,325 A. U. ($E\ \frac{1\%}{1\ cm.} = 1.2$) when dissolved in cyclohexane.

Transfer about 25-30 mg. of testosterone propionate to a suitable flask, add 2-3 cc. of a 1.0 per cent solution of potassium hydroxide in methanol and heat the mixture under reflux for one hour. Cool, add 10-15 cc. of water and allow the precipitate to settle. Filter, wash the crystals with water until the washings test neutral and dry the product in a vacuum at 80 C. for three hours: the testosterone crystals obtained melt between 150 and 152 C.

Transfer about 25-30 mg. of testosterone propionate to a suitable flask, add 3-5 cc. of hydroxylamine acetate solution (dissolve 50 mg. of hydroxylamine hydrochloride and 50 mg. of sodium acetate in 25 cc. of methanol) and heat under reflux for one hour. Cool, add 15-20 cc. of water, filter, wash the precipitated ketoxime with water and dry in a vacuum at 80 C. for one hour. Recrystallize the dry ketoxime from 70 per cent methanol, filter and dry in vacuum: the crystals melt between 167 and 170 C.

Dry about 0.1 Gm. of testosterone propionate, accurately weighed, in a vacuum at 80 C. over phosphorus pentoxide for three hours: the loss in weight does not exceed 0.5 per cent. Ash about 10 mg. of the dried sample, accurately weighed: the weight of the residue does not exceed 0.1 per cent.

Transfer about 50 mg. of testosterone propionate, accurately weighed, to a suitable flask, add 0.5 Gm. of Girard Reagent P, 20 cc. of anhydrous methyl alcohol and 10 cc. of 10 per cent propionic acid in anhydrous methanol. Heat the mixture under reflux for three hours, using a condenser fitted with a drying tube. Cool, rinse the condenser with 5 cc. of anhydrous methanol and transfer the contents of the flask to a beaker containing 50-75 cc. of water to which a quantity of 1 normal sodium hydroxide, sufficient to neutralize 10 cc. of the methanolic propionic acid, has been added. Add 10 cc. of a solution made to contain 1.0 per cent of mercuric iodide and 2.0 per cent of potassium iodide and 10 cc. of 10 per cent acetic acid. Stir the mixture and allow to stand for three to six hours while the precipitate settles. Filter, collecting the precipitate on a suitable tared sintered glass or gooch crucible. Wash the precipitate twice with 5 cc. portions of water and dry to constant weight in vacuum over phosphorus pentoxide. Multiply the weight of the dried precipitate by the factor 0.3556 to obtain the weight of testosterone propionate represented: the amount of testosterone propionate found corresponds to not less than 95 per cent nor more than 101 per cent, calculated to the dried substance.

RARE CHEMICALS, INC., HARRISON, N. J.

Testosterone Propionate in Oil: 1 cc. ampuls of 5 mg. per cubic centimeter, 10 mg. per cubic centimeter and 25 mg. per cubic centimeter, equivalent to 250, 500 and 1,250 international capon units per cubic centimeter respectively in sesame oil.

ESTROGENIC SUBSTANCES (See New and Nonofficial Remedies, 1946, p. 443).

The following additional dosage form has been accepted:

THE SMITH-DORSEY CO., LINCOLN, NEB.

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THEOPHYLLINE ETHYLENEDIAMINE (See New and Nonofficial Remedies, 1946, p. 395).

The following dosage form has been accepted:

THE HARROWER LABORATORY, INC., GLENDALE 5, CALIF.

Tablets Aminophylline: 0.1 Gm.

SULFADIAZINE (See New and Nonofficial Remedies, 1946, p. 181).

The following dosage forms have been accepted:

THE HARROWER LABORATORY, INC., GLENDALE 5, CALIF.

Tablets Sulfadiazine: 0.5 Gm.

THE VALE CHEMICAL CO., INC., ALLENTOWN, PA.

Tablets Sulfadiazine: 0.5 Gm.

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THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 28, 1946

THE PUBLIC RELATIONS OF THE AMERICAN MEDICAL ASSOCIATION

At the meeting of the House of Delegates of the American Medical Association held in Chicago in December 1945 the Board of Trustees announced to the House of Delegates that it had employed a public relations counsel to survey the work of the American Medical Association in its relationships to the medical profession and the public. The Raymond Rich Associates were employed for the purpose and spent almost six months in an intensive study of the activities of the Association in its headquarters office and in sampling opinion from a variety of sources as to the public concept of the work of the Association in advancing the progress of medical science, in rendering medical service and in exercising leadership in the medical field. The Rich report was sent by Mr. Rich directly to each member of the Board of Trustees of the American Medical Association about two weeks before the time of the annual session in San Francisco. A portion of the report was analyzed by the Board of Trustees and presented to the House of Delegates at that time. The rest of it was referred by the House of Delegates to a special committee appointed by the speaker of the House of Delegates so that the entire report might be given consideration by this committee of the House, working with the Board of Trustees, for submission to the House of Delegates at the midwinter session, to be held in Chicago early in December.

During the week just past the special committee of the House of Delegates, headed by William Bates (Pennsylvania), and including Barney J. Hein (Ohio), Allen H. Bunce (Georgia), David D. Scannell (Massachusetts), Thomas Lewis (New Jersey), S. J. McClendon (California) and E. H. Cary (Texas), met with the Executive Committee of the Board of Trustees, except for two members who were unavoidably absent, and went over carefully not only the portions of the Rich report already acted on by the House of Delegates but also the rest of it. Copies of the complete Rich report will be given to the House of Delegates at the midwinter session in Chicago. The Rich report has been copyrighted by the American Medical Association and reproduction, in whole or in part, without specific authority is forbidden.

Some misapprehension was expressed at the San Francisco session over the fact that the Board of Trustees did not at that time present to the House of Delegates the complete text of the Rich report. The portion which was presented to the House of Delegates dealt with certain actions already in progress, to which the Board of Trustees had given careful consideration. The recommendations of the Board of Trustees were at that time accepted by the House of Delegates. They included as their prime objective the establishment in the headquarters office of a division of public relations under a full time, salaried public relations counsel, intensification of the activities of the Council on Medical Service leading toward prompt fulfilment of the desire to set up throughout the nation voluntary systems of prepayment against the costs of sickness which would cover vast numbers of people, and extension through The Journal and *Hygeia* to the medical profession and to the public of information regarding the progress of medical science and its good for the American people, with special emphasis on the celebration in 1947 of the one hundredth anniversary of the American Medical Association.

Although the time has been short since the meeting in San Francisco during the first week of July, the Board of Trustees has already taken the necessary steps toward expansion of *Hygeia*, both in make-up and in circulation, toward expanding the radio program of the American Medical Association on a considerable scale and toward a crowning celebration of the Centennial at the meeting in Atlantic City in June 1947. The Council on Medical Service has intensified its efforts toward the extension of voluntary prepayment plans and has reported a rapid rise in the enrolment of people in such plans. Conferences have been held with representatives of nonprofit as well as of private insurance plans, and the establishment of acceptable standards is well under way. The Board of Trustess in a meeting just completed has authorized the retaining of Raymond Rich Associates as a public relations counsel, as well as the employment of a full time officer for this purpose in the headquarters office, with a budget adequate to the needs of the Association.

A controversial portion of the report deals with the relationships of the American Medical Association to other organizations concerned with opposition to

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the so-called socialization of medicine. Previous meetings of the House of Delegates have unanimously endorsed the efforts of the National Physicians Committee and of other organizations with like objectives. This question, as considered in the Rich report, will come for consideration before the House of Delegates at the midwinter session.

The rest of the Rich report deals with the functions of the various councils and bureaus in the headquarters office, with the pamphlet and book publications issued by such groups, and with the manner in which their work is extended to the medical profession and the public. As in all reports of efficiency experts and public relations counsels, some criticisms of relatively minor importance have been made—some, indeed, without apparent full understanding of the possibilities inherent in the circumstances, the facilities available to accomplish certain objectives, or similar factors. By direction of the Board of Trustees, the Secretary and General Manager of the Association has submitted each of these sections of the Rich report to the respective council or bureau in the headquarters office, and the special committee of the House of Delegates, as well as the House of Delegates itself, will be given full opportunity to review not only the statement in the Rich report but the analysis and critique of such statement by the respective council or bureau concerned.

Apparently some agencies, publications or individual physicians, intent on arousing dissension in the House of Delegates of the American Medical Association and on disrupting the unity of the Association in accomplishing the objectives that it has established, are endeavoring to foster discontent by unwarranted assertions that there has been purposeful secrecy in the handling of the Rich report and by asserting that the report itself contained charges or criticisms of serious import and reflected unfavorably on the councils, bureaus or officials of the Association. These statements are without the slightest basis in fact; they are unsupported by any evidence in the Rich report itself. Members of the House of Delegates and physicians generally will do well to await the careful, mature reception and analysis of this report by the House of Delegates and the final action taken by the Board of Trustees before giving any credence to such assertions. The actions already taken by the Board of Trustees on that portion of the Rich report which was presented to the House of Delegates should be sufficient evidence that the Board of Trustees of the Association and its employed officials are doing everything possible to further the objectives sought by the employment of a public relations counsel so that these activities of the Association might be kept up to date with the most modern concepts in this field.

THE MALE EUNUCH

The study of eunuchism by employing the historical method has been suggested as a means of contributing to a better understanding of the condition. The early eunuchs have been divided by Cawadias[1] into five classes: those who were employed by ancient Eastern and other peoples as special slaves or servants; the religious eunuchs, who represented a form of mystical madness causing priests and followers of certain ancient Eastern religions to castrate themselves so as to devote the whole of their services to their divinities; the singer eunuchs, or those who were castrated in order to keep a sweet infantile feminine soprano voice, which was much sought after; the eunuchs who were victims of criminal assault, and finally those who were castrated for medical or eugenic reasons.

The history of these types of eunuchs as described by Cawadias is fascinating. Religious castration, he says, was renewed in the middle of the eighteenth century by a sect originating in Russia and spreading into Rumania, known as the Skoptzy. Medically speaking, this group was particularly important since its members were the first eunuchs to undergo complete medical examination.

During the contemporary period the symptomatology of eunuchism has been completed with the clinical syndrome of male eunuchism as defined by Cawadias:

> In prepuberal castration [there is] (1) tallness, macroskelia, underdevelopment of hair on face and body with good development of scalp hair, thinness. Obesity develops much later in some cases from postpituitary reaction. (2) Absence of potency and libido, hypoplasia of external genitals, prostate and seminal vesicles. (3) Variable psychological picture according to the reaction of the psyche. Usually tendency to introversion with infantilistic traits and abnormalities of behavior of "limelight" nature due to overcompensation of an inferiority complex. Prepuberal castrates, however, often show normal intellectual functions and capacity for action and achievement. (4) Diminution of basal metabolism, disturbances (not clearly determined) of creatine metabolism, slight diminution in the excretion of androgens in the urine.
>
> Postpuberal castrates show:
>
> (1) no tallness, no macroskelia, usually no underdevelopment of hair (Pittard's hairy castrates), obesity of special girdle type setting in earlier. (2) Potency and libido can be maintained. (3) Same psychological manifestations as in prepuberal castrates but colored by the personality structure of the patient and by the environment. Similar metabolic and hormonal findings.

Studies of male castrates has had a direct influence on the isolation and identification of the male testicular hormone androgen. More recently a second testicular hormone, inhibin, has been discovered. Thus, step by step, as Cawadias points out, the idea of a vague connection between "semen" and virility, through the conception of lack of testicular internal secretion, has advanced until "the conception of total disturbance of the system of constitutional regulation, starting with deficiency of the testis but depending on the individual capacity of this system of constitutional regulation," has now emerged.

There is a direct evolutionary development from the early historical information on male eunuchism to the present precise knowledge of testicular function.

1. Cawadias, A. P.: Male Eunuchism in the Light of the Historical Method, Proc. Roy. Soc. Med. **39**: 501 (June) 1946.

EPIDEMIC HEPATITIS

Epidemic hepatitis was one of the important infectious diseases in military personnel in the second world war, as in previous wars. The important features in the natural history and pathology of the disease have recently been described [1] by Lucké based on a study of over 300 fatal cases, a series of nonfatal cases studied through biopsies and a group in which recovery from hepatitis was complete. This disease is now believed to be a virus disease identical with catarrhal, infectious, endemic and epidemic jaundice and possibly also with the homologous serum and postinoculation forms of hepatitis, from which it differs in having an incubation period of twenty to forty days, compared with one hundred days for the latter.

The onset of epidemic hepatitis is insidious and the course generally mild. In about 0.3 per cent of cases the disease exhibits nervous manifestations and ends fatally in a period of ten days to six weeks or longer. The essential anatomic changes are in the liver, where extensive destruction of hepatic cells and a severe inflammatory reaction are found. In late stages, regenerative phenomena in liver cells and bile ducts are seen. The brain shows little change despite the striking cerebral manifestations.

Liver biopsies reveal that the lesions in nonfatal cases resemble those of fatal cases in kind but to a milder degree. The damage is quickly repaired, and histologically the lesions cannot be distinguished from those of inoculation hepatitis. Furthermore the changes in sporadic and epidemic cases cannot be distinguished from one another.

Examination of the liver after recovery from infectious hepatitis in persons who died as the result of accident or unrelated disease revealed rapid regeneration. Residual damage or progressive pathologic change was not observed in cases examined from two months to three years after an attack, nor was there evidence of progression to cirrhosis.

The liver lesions may be extensive before the onset of symptoms. The degree of jaundice is not correlated with the severity of the disease. The jaundice is only partly explained by obstruction of biliary canaliculi by bile casts. The cerebral manifestations and death are probably due to an imbalance of tissue fluids and the accumulation of toxic substances.

The lesions found in hyperacute cases of epidemic hepatitis, namely those fatal in two to ten days after the clinical onset, have recently been described by Wood [2] and compared with those in acute cases of homologous serum hepatitis. With this material some gaps in the histogenesis of the lesions could be filled. On the second day the liver cells were already swollen and detached from one another, and by the tenth day they had autolyzed and the débris had been removed. Inflammation was most evident in the early stages. Wood also emphasized the similarity of the changes to those of "acute yellow atrophy." The acute course and high mortality in the group (19 per cent) he thought might be explained by the previous poor nutritional state of the patients consequent to war wounds of long standing.

Despite the close similarity of the lesions in homologous serum hepatitis and epidemic hepatitis, emphasized by both Lucké and Wood, it appeared from the work of Neefe, Stokes and Gellis [3] that two different agents were involved. In their experiments 6 human volunteers, after recovery from homologous serum jaundice, were immune to reinoculation of the agent, but 5 developed jaundice following an inoculation with material containing the agent of infectious hepatitis.

If Lucké is correct in his statement that epidemic hepatitis does not go on to cirrhosis, the disease falls in a different group from "acute yellow atrophy," despite their morphologic similarity emphasized by Wood, because the latter disease is generally believed to go on to cirrhosis in the late stages of some cases.

Thus step by step the etiology and classification of the diseases characterized by acute hepatitis and jaundice are being revealed. Success in this work should lead to specific measures for treatment and prevention.

1. Lucké, Baldwin: Epidemic Hepatitis, Proc. Inst. Med. Chicago **16:** 66 (Feb. 15) 1946.
2. Wood, David A.: Pathologic Aspects of Acute Epidemic Hepatitis, with Especial Reference to Early Stages, Arch. Path. **41:** 345 (April) 1946.
3. Neefe, John R.; Stokes, Joseph, Jr., and Gellis, Sidney S.: Homologous Serum Hepatitis and Infectious (Epidemic) Hepatitis: Experimental Study of Immunity and Cross Immunity in Volunteers, Am. J. M. Sc. **210:** 561 (Nov.) 1945.

Current Comment

CLINICAL EVALUATION OF ANALGESIC DRUGS

The reactivity to a painful stimulus varies from one person to another and even in the same person from time to time. As emphasized by Batterman [1] there is no way to evaluate the severity, quality and duration of pain accurately except by taking a careful history. The patient's description of the symptom is the sole guide to its severity. In the final analysis one must rely on the patient's admission of the degree of relief. Clinical experience suggests that elevation of the pain threshold is only one of the possible modes of action of analgesics. The majority of analgesic agents exert their main action within the central nervous system. Of the various levels of integration of pain within the central nervous system the cerebral cortical level is undoubtedly the most important. The analgesic agent probably acts by altering the transmission of the pain impulse from the periphery to the cerebral cortex, where the consciousness of the pain is manifest. The effect of suggestibility on the pain threshold is well known and in some instances may equal that of a mild analgesic drug. Batterman concludes that the central action of analgesia is a combination of the psychic,

1. Batterman, R. C.: The Clinical Aspects of Evaluating Analgesic Agents, with Notes on the Safety of Morphine, Yale J. Biol. & Med. **18:** 595 (July) 1946.

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together with some interference in the path by which the sensation reaches the consciousness. The drug to be considered as an analgesic for clinical use must first pass the test of toxicity in laboratory animals, the test of its action on the cardiovascular and respiratory systems as well as its ability to raise the pain threshold. The drug is then administered to both hospitalized and ambulatory patients with every type and severity of pain. The effectiveness of the analgesic is then analyzed according to four categories: (1) complete control of pain, including complete relief of pain for three or more hours and almost complete relief of pain for several hours; (2) moderate control of pain, including complete relief and almost complete relief of pain for under three hours; (3) slight control of pain, including partial relief for under three hours; (4) no control of pain. Morphine, the most potent of all analgesics, has a number of undesirable pharmacologic effects and therefore could not be considered as the ideal solution of the problem of analgesia. Batterman concludes that there is no drug available today which meets all the requirements demanded for a suitable and effective analgesic agent. There is room for much more work and for the development of drugs which may be of value for clinical analgesia.

COLLATERAL INHIBITION OF GASTROINTESTINAL ABSORPTION

In 1936 Whipple and his associates [1] of the University of Rochester showed that a subcutaneous abscess causes a disturbance of iron metabolism almost completely sufficient to prevent new hemoglobin formation in anemic dogs. This was of basic clinical interest because of the frequent occurrence of anemias, often refractory to treatment, associated with local infections and other inflammatory processes. A restudy of this collateral effect by means of orally administered radioactive iron [2] has led Whipple to conclude that in addition to this inhibition of iron metabolism the rate of gastrointestinal absorption of iron is also greatly reduced by subcutaneous inflammatory processes. In a typical experiment, an adult fox terrier which had been maintained for over two years at an anemic level by periodic bleeding was given 10 mg. of radioactive iron orally in the form of ferrous chloride. Analyses of blood samples taken over a period of two weeks showed a gastrointestinal absorption of 41 per cent of the ingested dose. A month later a sterile abscess was produced in this dog by the injection of 1 cc. of turpentine into the axilla. The oral dose of radioactive iron was repeated twenty-four hours later. Subsequent blood analyses showed a total iron uptake of 4.1 per cent of the ingested dose. This was but one tenth of the amount absorbed in the previous control test. The abscess was incised and drained, and it healed within four days. A subsequent test six weeks later showed an almost complete recovery of the original absorption capacity. Similar collateral reductions in the gastrointestinal absorption of iron were demonstrated in all other anemic dogs thus far tested. A theory has not yet been suggested to account for this collateral effect of subcutaneous abscess. Human subjects have not yet been tested.

1. Robscheit-Robbins, Frieda S., and Whipple, G. H.: J. Exper. Med. **63**: 767, 1936.
2. Hahn, P. F.; Bale, W. F., and Whipple, G. H.: Proc. Soc. Exper. Biol. & Med. **61**: 405 (April) 1946.

TREATMENT OF TRYPANOSOMIASIS

Although cases of trypanosomiasis have not yet been reported here, physicians everywhere should be alert to the possibilties of trypanosome infections. During the war many civilian and military personnel were stationed in areas where trypanosomiasis was endemic. The trypanocidal activity of p-arsenosophenylbutyric acid, an acid-substituted phenyl arsenoxide, has been described by Eagle and his associates [1] for Trypanosoma equiperdum infections in mice and rabbits. This drug has also been shown to have therapeutic activity in experimental infections with Trypanosoma gambiense.[2] Recently Eagle [3] has reported a study which deals with 319 human cases of T. gambiense infection treated in the early stages of the disease before involvement of the central nervous system. This investigation is the result of a collaborative effort by the Sleeping Sickness Services of the Belgian Congo, French Equatorial Africa, French West Africa, the Gold Coast, Nigeria and the Firestone Plantation in Liberia. The cases in the series represent a cross section of the disease with respect to age, sex and geographic distribution. From studies of crude failure rates at various dosages it was estimated that more than 90 per cent of early cases can be cured by total dosages of 6 to 7 mg. per kilogram. The therapeutic efficacy of the compound was apparently independent of variations in the amount of injection, the number of injections, their frequency or the total duration of treatment. Most of the patients received in the injections an average dose of 0.4 mg. per kilogram of body weight. However, as much as 2 mg. per kilogram was administered daily to some by intravenous injection for ten days without ill effects. Immediate reactions were uncommon and occurred in less than 1 per cent of four thousand injections. Two patients died soon after a course of treatment, but information could not be elicited that the drug was the cause of death. As a result of this study the author concludes that early infections of T. gambiense may be definitively cured within two weeks by twelve to fourteen daily injections of 0.5 mg. per kilogram or within one week by six to seven injections at 1 mg. per kilogram. If daily injections are not feasible, the same number of injections may be given at any desired interval up to one week with equal effectiveness. Further investigations are now in progress on the results of treatment in advanced cases of trypanosomiasis with central nervous system involvement using p-arsenosophenylbutyric acid alone and in combination with other trypanocidal agents.

1. Eagle, H.; Hogan, R. B.; Doak, G. O., and Steinman, H. G.: The Therapeutic Efficacy of Phenyl Arsenoxides in Mouse and Rabbit Trypanosomiasis (Tryp. equiperdum), Pub. Health Rep. **59**: 765, 1944.
2. van Hoof, L.; Henrard, C., and Peel, E.: Personal Communications from l'Institut de Princesse Astrid et Lazaret de Mont Leopold, Leopoldville, Belgian Congo, to Harry Eagle.
3. Eagle, Harry: The Treatment of Trypanosomiasis with p-Arsenosophenylbutyric Acid: I. Results in 319 Cases of Early Trypanosoma Gambiense Infections, Pub. Health Rep. **61**: 1019 (July 12) 1946.

ORGANIZATION SECTION

Washington Letter

(From a Special Correspondent)

Sept. 23, 1946.

Number of Persons Having Some Physical Disability

The Retraining and Reemployment Administration reports that a minimum of 28,000,000 persons in the United States have some physical disability. This was revealed when District of Columbia commissioners led off local communities in calling for active community implementation of National Employ the Physically Handicapped Week, October 6 to 12. About 228,000 disabled veterans and 85,000 disabled civilians are now hunting jobs. Most disabled persons are not prevented from doing satisfactory work, but approximately 2,500,000 of working age have injuries which interfere with their getting and holding suitable jobs. Another hundred thousand disabled veterans are taking vocational rehabilitation courses under the Veterans Administration and will soon be seeking jobs.

Revival of Research on Basic Natural Laws

Scientists who attended the informal two day symposium conducted by the National Academy of Sciences revealed that American basic research, which was dormant during the war, is being revived. Dr. I. I. Rabi, Nobel Prize winner, declared that "these scientists have demonstrated intense interest in going back to the investigation of the basic laws. In spite of the fact that they have been successful during the war in making new devices, now they are showing the same old interest in basic science as before the war." Dr. C. D. Anderson, another Nobel Prize winner, was also present, as were K. T. Bainbridge, S. K. Allison, C. C. Lauritsen, Bruno Rossi, L. N. Ridenous, J. C. Slater, W. F. G. Swann and others. They were welcomed by Vice Admiral H. G. Bowen of the Office of Naval Research.

Red Cross State Chapters to Have Liaison with Health Agencies

Sweeping changes in the organizational structure of the American Red Cross, announced by National Chairman Basil O'Connor, include placing active control in the hands of local chapters and the formation from chapters within each state of committees for liaison with state relief, health and welfare agencies. The changes were based on recommendations from a twenty-seven man advisory committee headed by E. Roland Harriman of New York. They were proposed "to make certain that all the American people who constitute the American Red Cross have adequate representation in shaping its policies and to review its organization to insure the most effective handling of its program."

October 6 to 12 "National Employ the Physically Handicapped Week"

President Truman has proclaimed October 6 to 12 as "National Employ the Physically Handicapped Week" and has called on employers throughout the nation to help find suitable jobs for the 225,000 disabled war veterans and 75,000 other physically handicapped persons seeking employment. The Veterans Administration, augmenting the government's "jobs for the handicapped" program, has set an example by employing physically impaired persons, both veterans and nonveterans, in its offices. A Washington office special unit has been created to interview and place employable persons with physical disabilities, and such special units will be set up in branch and regional offices of the agency later.

Medal of Merit Awarded for War Service

President Truman has approved the award of the medal of merit for war service to Mark A. McCloskey, former head of the Office of Community Services, who as director of recreation and community services in the Federal Security Agency had charge of a nationwide social protection program. His job included a coordinated effort to repress prostitution as a menace to wartime health.

Official Notes

TELEVISION PROGRAMS

Arrangements have been completed by the Bureau of Health Education and television station WBKB, Chicago, for presentation of the following programs on the indicated dates:

October 10. The A. M. A. physician placement program.
Mrs. Virginia Shuler, Bureau of Information.
October 24. Medical uses for snake venoms.
Dr. Austin Smith, Secretary of the Council on Pharmacy and Chemistry, and Mr. R. Marlin Perkins, Director, Lincoln Park Zoo, Chicago.
November 7. Keeping Fit.
Dr. Dean F. Smiley, Bureau of Health Education.
November 21. Care of the Teeth.
Dr. Lon W. Morrey, Director, Bureau of Public Relations, American Dental Association.
December 5. Nursing Care in the Home.
Miss Henrietta Froehlke, Director of Nurses, Presbyterian Hospital, Chicago.

The programs represent a continuation of activities begun early this year. Presented under the general title of "Cavalcade of Medicine," they are identified in each introduction as contributions to better understanding of medicine and the aims of the profession, sponsored by the American Medical Association. Experience being obtained as a result of this work indicates that television will eventually prove of much value as a health education medium.

Coming Medical Meetings

Annual Congress on Industrial Health, Boston, Sept. 30-Oct. 2. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago 10, Secretary.

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 13-18. Dr. W. L. Benedict, 102 Second Ave. S.W., Rochester, Minn., Secretary.
American Association of Medical Record Librarians, Philadelphia, Sept. 30-Oct. 4. Mrs. Adaline Hayden, 18 E. Division St., Chicago, Executive Secretary.
American Association of Railway Surgeons, Chicago, Oct. 29-31. Dr. Raymond B. Kepner, 547 West Jackson Blvd., Chicago 6, Secretary.
American Association on Mental Deficiency, Montreal, Canada, Oct. 2-4. Dr. Neil A. Dayton, Mansfield Depot, Connecticut, Secretary.
American Clinical and Climatological Association, Hershey, Pa., Oct. 21-23. Dr. James Bordley III, Johns Hopkins Hospital, Baltimore 5, Secretary.
American Hospital Association, Philadelphia, Sept. 30-Oct. 3. Mr. George P. Bugbee, 18 E. Division St., Chicago, Executive Secretary.
Association of American Medical Colleges, Edgewater Beach, Miss., Oct. 28-30. Dr. Fred C. Zapffe, 5 South Wabash Ave., Chicago, Secretary.
Association of Military Surgeons of the United States, Detroit, Oct. 9-11. Col. James M. Phalen, Army Medical Museum, Washington 25, D. C., Secretary.
District of Columbia, Medical Society of the, Washington, Sept. 30-Oct. 2. Mr. Theodore Wiprud, 1718 M Street N. W., Washington 6, Secretary.
Indiana State Medical Association, Indianapolis, Oct. 29-31. Mr. Ray E. Smith, 23 East Ohio St., Indianapolis 4, Secretary.
International College of Surgeons, United States Chapter, Detroit, Oct. 21-23. Dr. Louis J. Gariepy, 16401 Grand River Ave., Detroit 27, Secretary.
Inter-State Postgraduate Medical Association of North America, Cleveland, Oct. 15-18. Dr. Tom B. Throckmorton, 406 Sixth Ave., Des Moines, Iowa, Secretary.
Kansas City Southwest Clinical Society, Kansas City, Mo., Oct. 7-10. Dr. A. Lloyd Stockwell, 630 Shukert Bldg., Kansas City 6, Secretary.
Kentucky State Medical Association, Paducah, Sept. 30-Oct. 3. Dr. P. E. Blackerby, 620 S. Third St., Louisville, Secretary.
Nevada State Medical Association, Las Vegas, Oct. 4-5. Dr. Moreton J. Thorpe, 17 N. Virginia St., Reno, Secretary.
North Pacific Pediatric Society, Vancouver, B. C., Oct. 19. Dr. A. B. Johnson, Cobb Bldg., Seattle 1, Secretary.
Omaha Mid-West Clinical Society, Omaha, Oct. 28-Nov. 1. Dr. Roy W. Fouts, 1036 Medical Arts Bldg., Omaha 2, Secretary.
Pacific Association of Railway Surgeons, San Francisco, Oct. 18-19. Dr. W. T. Cummins, 1400 Fell St., San Francisco 17, Secretary.
Pennsylvania, Medical Society of the State of, Philadelphia, Oct. 7-10. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh 22, Secretary.
Southern Medical Association, Miami, Fla., Nov. 4-7. Mr. C. P. Loranz, Empire Bldg., Birmingham 3, Ala., Secretary.
Southern Psychiatric Association, Richmond, Va., Oct. 7-8. Dr. Newdigate M. Owensby, 384 Peachtree St. N.E., Atlanta, Ga., Secretary.
Vermont State Medical Society, Burlington, Oct. 2-4. Dr. Benjamin F. Cook, 128 Merchants Row, Rutland, Secretary.
Virginia, Medical Society of, Virginia Beach, Oct. 14-16. Miss Agnes V. Edwards, 1200 East Clay St., Richmond 19, Secretary.
Wisconsin, State Medical Society of, Milwaukee, Oct. 7-9. Mr. Charles H. Crownhart, 110 E. Main St., Madison 3, Secretary.

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GOVERNMENT SERVICES

ARMY

MEDICAL DEPARTMENT BOARD REESTABLISHED

An important step in the postwar program of the Army Medical Department has been taken in the establishment of the Medical Department Board at Brooke Army Medical Center, Fort Sam Houston, Texas. The board was previously located at Carlisle Barracks, Carlisle, Pa., and was discontinued during the war, its activities being largely delegated to the field.

The board will study changes that will be required in army medicine to keep abreast of concepts of modern war and will inform the Surgeon General's Office of new technics and act on all matters referred to it by the Surgeon General. The board will consider the organization and equipment of medical units, tactical employment of Medical Department troops and changes and improvements in Medical Department equipment.

The chairman of the board is Brig. Gen. John M. Willis, surgeon of the Middle Pacific area during the war and now commanding officer of the Brooke Army Medical Center.

COLONEL ARMSTRONG IN CHARGE OF SCHOOL OF AVIATION MEDICINE

Col. Harry G. Armstrong, M. C., has been placed in command of the School of Aviation Medicine, Randolph Field, Texas, following the retirement of Brig. Gen. Eugen G. Reinartz. Colonel Armstrong, former director of the Aero Medical Research Laboratory at Wright Field, Ohio, helped make high altitude flying possible. He came to Randolph Field in 1941 as director of the division of research for the school and a year later was transferred to the Eighth Air Force in England. In 1939 he was awarded the Collier trophy for the greatest achievement in aviation in the preceding year. He was presented in 1941 with the John Jeffries award for the greatest contribution to aviation medicine and in 1942 was awarded an honorary degree of Doctor of Science by the University of South Dakota for his work in aviation medicine. He has been awarded the Wellcome award and prize for military aviation, is the author of "Principles and Practices of Aviation Medicine" and co-author of "Fit to Fly." Colonel Armstrong wears among others the American Defense Ribbon with battle star, Croix de Guerre with Palm and the Legion of Merit with oak leaf cluster. He received his Doctor of Medicine degree from the University of Louisville in 1925 and began his private practice after a year of internship. He then applied for and received a Regular Army commission in 1930.

MEDICAL OFFICERS STUDY IN CIVILIAN SCHOOLS

During the present calendar year, more than 180 officers of the Army Medical Department will have taken specialized courses in various subjects in twenty-seven of the nation's leading medical schools. Many of the courses are of three months' duration; a few run up to a year. It is the Surgeon General's policy to assign officers to shorter courses wherever possible.

This program does not in any way interfere with the schooling for veterans under the G. I. Bill of Rights. It is primarily aimed at providing refresher courses for professional medical personnel who have been assigned to administrative duties during the war. The Surgeon General plans to have medical officers apply to the various American specialty boards for examinations in subjects which will cover each branch of practice in all major hospitals. The Surgeon General declared that no officer will be sent for graduate schooling if such an assignment would prejudice the welfare of any soldier patient. Officers who receive specialized training will instruct their staffs in the latest technics on their return to active duty.

Army doctors are now studying to qualify for application to specialty boards for examinations in radiology, internal medicine, dermatology and syphilology, ophthalmology, otolaryngology, neuropsychiatry, surgery, plastic surgery, orthopedic surgery, neurosurgery, obstetrics and gynecology, anesthesiology, urology, pediatrics and pathology. Other courses in which medical specialty boards are not yet established, but which are attended by officers, are public health, physical medicine, nursing education, operating room technic and management, prosthetic dentistry, oral surgery, industrial medicine, pharmacy, hospital administration and meat and dairy inspection.

REHABILITATION CENTER FOR THE HARD OF HEARING

The Army's new and ultramodern rehabilitation center for the deafened and hard of hearing received its first patients at the Forest Glen Section of Walter Reed General Hospital, Washington, D. C., a few days ago. Designed as a special unit where the hearing handicapped can have their disability appraised and corrected to the maximum extent through hearing aids, lip reading and speech correction, the Aural Rehabilitation Center will have sufficient space, equipment and staff to care for 250 "students." The G. I. enrolees will, indeed, be students rather than patients. They will be those who are finished with treatment and surgery and who now require rehabilitative attention.

At various times during the war the Army maintained hard of hearing centers at Deshon, Hoff and Borden general hospitals. All three have now been closed, and this type of case now will be concentrated at Walter Reed's Forest Glen unit.

The unit will have its own laboratory, where dental technicians will make the ear-fitting molds into which the receiver of the hearing aid is installed. These molds are custom made for each wearer, since no two individuals possess ear canals that are identical. Lip or speech reading will be taught both in individual lessons and in class. Speech correction exercises will be given those whose enunciation or pronunciation has suffered as a result of hearing loss. Careful examination and study will precede issuance of a hearing aid. Several types are tested on the patient, and the one that gives the best results and which satisfies the learner most is the one ultimately selected.

The director of the center is Major Henry Cogswell Barnaby, an ear specialist who practiced in Glen Cove, Long Island, N. Y., before the war. There will be a staff of about fifty, including twelve instructors in speech reading, six acoustic technicians expert in testing and fitting hearing aids, six technicians who will teach how the device is most efficiently used, five speech correctionists and smaller numbers of specialists in other fields.

Major Barnaby estimates that not more than 20 per cent of the Army's deafness and hard of hearing cases can be attributed to trauma, that is, to blast injury or some other combat connected cause. The remainder were due to disease, infection after-effects or other unspectacular reasons.

Planned as an eight week program, the rehabilitation course at Forest Glen has as its objective the transformation of every student into an independent, adjusted individual capable of resuming his place in society with the least economic or social handicap.

WORLDWIDE VENEREAL DISEASE FIGURES

The War Department announced September 12 that 0.2 per cent of U. S. Army troops throughout the world were admitted to hospitals for treatment of venereal disease during the average week in July 1946. A breakdown in the overall figure gives the following rates for areas in which American troops were serving that average week:

In the United States, 0.1 per cent, or 1 out of every thousand soldiers.

In the European theater, 0.5 per cent, or 1 out of every 200 soldiers.

In the Western Pacific area, 0.3 per cent, or 1 out of every 333 soldiers.

Total overseas rate, 0.4 per cent, or 1 out of every 250 soldiers.

NAVY

NEW NAVAL HOSPITAL AT HOUSTON, TEXAS

The new U. S. Naval Hospital at Houston, Texas, was placed in commission on September 4. A $9,000,000 institution with thirty-seven buildings containing 1,000 beds and covering 118 acres, the hospital embodies the latest features in design, construction and equipment. Vice Admiral Ross T. McIntire, Surgeon General of the Navy, and a number of officers flew from Washington to Houston to be present at the commissioning. Admiral McIntire stated that the hospital would become a research center for plastic surgery and the treatment of tropical diseases. The Navy plans to bring patients to Houston by air from all parts of the country and from overseas installations, and every effort will be made to accommodate hospitalized naval personnel whose homes are in Texas and the surrounding states. The hospital is the first new medical institution to be completed in the area of the Texas Medical Center. Through close cooperation with the center's medical and research programs this hospital will serve as an important adjunct in the development of the medical center.

NAVY AWARDS AND COMMENDATIONS

Commander Frank Rudolph Urban

Commander Frank R. Urban (MC), U. S. Navy, was recently awarded the Bronze Star and Purple Heart "for distinguishing himself by exceptionally meritorious conduct in the performance of outstanding service from Oct. 14, 1944 to Aug. 16, 1945 as force medical officer for an amphibious force commander. In a highly efficient manner," the citation adds, "he formulated and supervised the execution of medical plans for extended operations against the enemy, displaying exceptional ability and initiative and a thorough knowledge of his profession. By his outstanding leadership, sound judgment and untiring devotion to duty, Commander Urban contributed materially to reduction in the loss of life incident to the capture and occupation of Iwo Jima and Okinawa islands. His conduct throughout was in keeping with the highest traditions of the United States Naval Service."

The Secretary of the Navy in the name of the President awarded the Purple Heart medal to Dr. Urban for wounds received in action against an enemy of the United States in February 1945 while attached to the U. S. S. *Auburn*.

Dr. Urban graduated from the University of Illinois College of Medicine, Chicago, in 1932 and has been in the Navy since that year.

Captain Guy E. Stahr

Capt. Guy E. Stahr was recently awarded the Commendation Ribbon for services in the performance of duties as senior medical officer of the U. S. S. *Rescue* when that hospital ship was utilized for the screening of 2,600 Allied prisoners of war off Hamanatsu, Japan. Subsequently the *Rescue* hospitalized a large number of ill prisoners. Captain Stahr in the preceding months had so organized the medical staff of the *Rescue* that when the acute emergency arose this ship was prepared and ready to meet the unusual demands placed on it efficiently and expeditiously. The citation goes on to say that his leadership and personal example of high professional attainment inspired subordinates and reassured and comforted those rescued from internment in enemy hands. His conduct was at all times in keeping with the highest traditions of the United States Naval Service. Dr. Stahr graduated from the University of Indiana School of Medicine, Indianapolis, in 1928. He was appointed lieutenant (jg) in the Navy July 9, 1928.

Captain Frederick Robert Lang

Capt. Frederick R. Lang was recently awarded the Legion of Merit for exceptionally meritorious conduct in the performance of outstanding services to the government of the United States as assistant naval attaché, assistant attaché for air and staff medical officer in the office of the naval attaché, United States embassies at Kuibyshev and Moscow, Union of Soviet Socialist Republics, from April 3, 1942 to July 27, 1944. Applying himself to his responsibilities with energy, tact and professional skill, says the citation, "Captain (then Commander) Lang achieved high prestige among Soviet and foreign officials to the advantage of the United States Naval Service in its relations with the Soviet Union. During bombing attacks he courageously and efficiently treated the wounded under fire and, determined to further research and advance the effectiveness of his profession, persisted in his medical efforts until he contracted typhus. His tenacious devotion to duty in the advancement of Soviet-American relations contributed materially to the prosecution of the war and reflects the highest credit on Captain Lang and the United States Naval Service." Captain Lang graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1931 and was appointed lieutenant (jg) in the Navy June 26, 1931.

Captain Robert Gaylord Davis

Capt. Robert Gaylord Davis has been awarded the Legion of Merit for exceptionally meritorious conduct in the performance of outstanding services to the government of the United States as medical officer in command of the United States Naval Hospital and the United States Naval Medical Supply Depot, Canacao, Philippine Islands, and as district medical officer from December 1941 to May 1942. The citation specifies that, as "an efficient leader and organizer, Captain Davis prepared his hospital almost overnight to serve as a front line evacuation hospital following the destruction of the Cavite Navy Yard by Japanese bombers and supervised the transportation of all stores in the medical supply depot at Canacao to Manila. During three subsequent evacuations of the hospital within the Manila area and after internment by the Japanese in January 1942 until the hospital was reestablished at Bilibid prison, he maintained superb control of the organization of the Canacao unit, contributing to the smooth and efficient functioning of the hospital in the care of American and Allied casualties. By his professional skill, ingenuity and conscientious efforts in the face of adverse conditions Captain Davis aided materially in sustaining the morale and health of the patients and prisoners, and his selfless devotion to duty throughout reflects the highest credit on himself and the United States Naval Service." Captain Davis graduated from Rush Medical College, Chicago, in 1909 and was appointed lieutenant (jg) in the Navy Feb. 29, 1912.

Lieutenant John A. Paulson

Lieut. John A. Paulson, Rochester, Minn., was a member of the personnel of the United States Ship LST-464 which received from the Secretary of the Navy, James Forrestal, a commendation "for extremely meritorious service in support of military operations as first aid ship during the campaign to recapture the Philippines from Oct. 24 to Dec. 30, 1944. Operating gallantly despite the blacked out harbor, rough waters, enemy gunfire and repeated dive bombing and suicide plane attacks, the U. S. S. LST-464 carried on her vital service of receiving and caring for casualties prior to their transfer to hospital ships. Maintaining constant readiness to aid as the number of wounded and injured increased under the fury of the enemy's fanatic opposition, she responded promptly and completely to all calls for help and proceeded boldly to beach or ship to take aboard men stricken in battle, often far in excess of her designed capacity. The courage and skill of her medical officers, her corpsmen and the stout hearted crew who manned her, and their tireless efforts under the most grueling conditions, made the LST-464 a symbol of devotion to duty. Although a small ship and only one among the many hundreds participating in the Philippines invasion, she was recognized by the enemy as a potential factor toward the success of our forces and was singled out as a major target for Japanese airmen. All personnel attached to and serving on board the LST-464 during the aforementioned period are hereby authorized to wear the Navy Unit Commendation Ribbon." Dr. Paulson graduated from the University of Minnesota Medical School, Minneapolis, in 1937 and entered the service Oct. 10, 1944.

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Captain Leo Cromwell Thyson

Capt. Leo Cromwell Thyson was recently awarded the Legion of Merit "for exceptionally meritorious conduct in the performance of outstanding services to the government of the United States while a prisoner of war at the Japanese prison camps near Shanghai and Fengtai, China, and at Hakodate, Japan, from Feb. 1, 1942 to Sept. 14, 1945." He was cited for displaying superb professional skill and fortitude in the discharge of his duties as senior surgeon in these camps. Captain Thyson persisted in his efforts to improve the hospital and medical facilities for the Allied nationals interned there. Despite lack of adequate supplies and equipment to combat malaria, dysentery and nutritional diseases, he succeeded in maintaining an exceptionally low rate of mortality among the prisoners. "By his unselfish efforts and zealous devotion to duty," continues the citation, "Captain Thyson was responsible for improving the health and living standards of his fellow Americans during the long period of incarceration, thereby reflecting great credit on himself and the United States Naval Service." Dr. Thyson graduated from George Washington University School of Medicine, Washington, D. C., in 1916 and was appointed lieutenant (jg) in the Navy July 20, 1917.

VETERANS ADMINISTRATION

AGREEMENT TO FACILITATE REHABILITATION

A cooperative working agreement was signed September 11 by the Office of Vocational Rehablitation in the Federal Security Agency and the Veterans Administration to facilitate vocational rehabilitation of veterans with a minimum duplication of effort and expense. The broad basic principles set forth in the agreement are intended to provide, among other things, that (1) state agencies will refer veterans who are eligible for services from the Veterans Administration to that agency in the event that they should apply to the States; (2) the Veterans Administration will refer veterans with non-service connected disabilities to the State Vocation Rehabilitation agencies for such rehabilitation services as guidance and counseling, training, medical, surgical and psychiatric care, hospitalization, maintenance, occupational tools and licenses. These services are provided by the State Vocational Rehabilitation agencies primarily to nonveterans (3) to encourage establishment of local public and private clinics, rehabilitation and retraining centers. In addition to veterans with non-service connected disabilities, vocational rehabilitation facilities of the state-federal partnership are available to members of the Coast Guard temporary reserve and war disabled civilians in the Maritime Service, Civil Air Patrol, the wartime aircraft warning service and citizens defense corps, as well as disabled civilians generally.

To be eligible for state-federal services, a man or woman must be of working age, have a substantial job handicap resulting from physical or mental disability and have a reasonably good chance of becoming employable or of getting a more suitable job through the rehabilitation services.

A vocational rehabilitation client pays nothing for medical examination, medical and vocational diagnosis, guidance, training or placement. To the extent that his financial condition will permit, he is expected to pay for all other services, including medical, surgical or psychiatric care, hospitalization, nursing care, drugs, appliances, occupational tools and licenses, travel and living expenses.

PLANS TO PAY VETERANS UNDER THE NEW LEAVE LAW

The Armed Forces Leave Act of 1946, which has been signed into law by the President, will give officers and enlisted men and women of all services identical leave rights and will limit the amount of leave which may accrue to any individual to sixty days, instead of the maximum of one hundred and twenty days for officers as heretofore. All individuals will be permitted to take as much leave as is consistent with their military duties, averaging thirty days a year.

Men still in active service who have accumulated from sixty-one to one hundred and twenty days' leave as of September 1 will be reimbursed in cash and bonds for the remainder over sixty days and on September 1 will have to their credit sixty days' leave. As more leave time accrues to these persons, they must take their leave or lose credit for it. Persons who have left the service will be paid in cash and bonds for accumulated leave not taken up to one hundred and twenty days between Sept. 8, 1939 and Sept. 1, 1946. In applying for this payment veterans should obtain from any post office in the United States or possessions a form entitled "Claim for Settlement Unused Leave" and the instruction sheet which goes with it, fill out this form and swear to or affirm the statements made in it before a notary public or other civil officer authorized to administer oaths. Then the veteran should mail the completed form, together with the discharge certificate or certificate of service for each period of service covered in the claim, to the appropriate Army, Navy, Marine Corps or Coast Guard paying officer listed on the reverse side of the claim form. The discharge certificate forwarded may be the original certificate given the individual at the time of his separation, a photostatic copy of this certificate or a copy certified to be a true copy by a state or local official duly authorized to make such certifications. Army and Navy paying officers suggested that before mailing the original discharge certificate the veteran should arrange to have at least one photostatic copy made for his own files. After the supporting documents have served their purpose they will be mailed back to the claimant. Payment will be made as soon as possible. Claimants are urged not to write or call on paying officers inquiring as to the progress of their claims, as such unnecessary correspondence would serve only to delay speedy settlement of claims. The law places a one year limit on the time for applying for leave payments but at the same time makes it possible for the claimant to wait the maximum time and not lose on the maturity date of the bonds. All claims to be considered must be filed by Sept. 1, 1947.

HOME TOWN MEDICAL CARE FOR VETERANS

Dr. Paul R. Hawley, chief medical director of the Veterans Administration, has announced that home town medical care for veterans with service connected disabilities may soon be had in twenty states. The program is already in operation in thirteen states. Contracts with state medical groups have been signed but not yet placed in operation in five states. In two others the Veterans Administration has received agreements which have not yet been given final approval. This home town medical care is available to veterans with service connected disabilities only when Veterans Administration establishments such as outpatient clinics could not promptly treat veterans or if traveling to them would involve undue hardship.

CHEST X-RAYS OF EMPLOYEES

Periodic chest x-rays of all employees of Veterans Administration hospitals and homes have been ordered in an effort to detect possible tuberculous infections, Dr. Paul R. Hawley, chief medical director, announced September 18. This action, Dr. Hawley said, will make it possible to detect tuberculosis at an early stage and to take proper steps to avoid serious and prolonged illness, to prevent dissemination of infection and to avoid excessive loss in working time and medical expense.

The program has been started as far as possible with existing personnel and facilities and without interfering with examination and treatment of veterans' beneficiaries. Only Veterans Administration salaried personnel and equipment will be used

for the x-ray examinations. New employees of hospitals and homes will be given chest x-rays at the time of their employment. Personnel now employed at hospitals and homes will be given chest x-rays as soon as possible and at least annually thereafter.

When Veterans Administration employees end their service with hospitals or homes, they will be given chest x-ray examinations whenever possible.

NUMBER OF VETERANS IN HOSPITALS

There were 80,133 patients in Veterans Administration hospitals on August 29, according to an announcement of the Veterans Administration. More than 26,000 veterans were hospitalized because of service connected disorders, and about 54,000 of them had non-service connected disorders. Veterans in non-Veterans Administration hospitals numbered 11,721, and 3,712 of them suffered from service connected disorders.

PUBLIC HEALTH SERVICE

NEW DEPUTY SURGEON GENERAL

Dr. James A. Crabtree, medical director, U. S. Public Health Service, was appointed Deputy Surgeon General of the Public Health Service, effective September 1. Since September 1945 Dr. Crabtree has served as special assistant to the Surgeon General. In his new assignment he will be second in command of the Public Health Service. The rank of Deputy Surgeon General is equivalent to that of a Commodore in the Navy or a Brigadier General in the Army.

The new deputy began his career in the Public Health Service in 1938, when he was assigned to the National Institute of Health to pursue studies on the epidemiology of cancer. In 1940 he was transferred to the Surgeon General's Office as executive assistant and in 1941 began extensive tours of duty with wartime health agencies. Previous to entering the service, Dr. Crabtree was engaged in public health work for city, county and state health departments in Tennessee. His appointment as assistant director of health and safety of the Tennessee Valley Authority in 1934 was his last civilian assignment.

Dr. Crabtree graduated from the University of Tennessee College of Medicine in 1925. He received postgraduate education in public health at Johns Hopkins University School of Hygiene and Public Health. He replaces Dr. Warren F. Draper, Deputy Surgeon General since 1939. In accordance with a request from the American Red Cross, Dr. Draper will be assigned to that organization as of September 1 as a consultant to Red Cross medical and health services.

FELLOWSHIPS IN HEALTH EDUCATION

Sixteen men and women in nine states and Puerto Rico have received graduate fellowships in health education from the National Foundation for Infantile Paralysis, the Surgeon General of the U. S. Public Health Service announced. Each student will have three months of field training in a health department under supervision of a public health educator, in addition to nine months of academic study. Field training as well as classroom studies must be completed satisfactorily before the master's degree in public health education is granted. The award winners, three of whom are veterans, were chosen from more than two hundred candidates who applied for consideration by the Training Committee on Public Health Education of the Public Health Service. They make a total of fifty-seven persons since 1944 who have been granted fellowships from the National Foundation for Infantile Paralysis for graduate study in the field of health education. The schools which the recipients of fellowships for 1946-1947 attend are the University of California, University of Michigan, University of Minnesota, University of North Carolina and Yale University.

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MISCELLANEOUS

PRICE CONTROL SUSPENDED

The Office of Price Administration on September 5 removed indefinitely from the list of controlled commodities a number of miscellaneous medical items. The announcement said that the decontrol action affecting medical products is not likely to result in a diversion of manpower, facilities or materials. Supply is considered to be in approximate balance with the demand for those products.

Among the suspended items are gloves, finger cots and sleeves for medical, surgical, obstetric, necropsy and mortuary purposes, hard rubber goods for medical, surgical, veterinary, mortuary and laboratory equipment and parts, obstetricians', surgeons' and urologists' aprons, operating cushions, patients' bibs and throws, and tubing, stopples and irrigators for medical, surgical, mortuary, veterinary and laboratory purposes.

These products are in most cases hand made, and productive capacity and available supplies are well in excess of demand.

PACKAGED HOSPITALS FOR SALE

Three "packaged hospitals" which the Navy had ready for shipment to the Pacific when Japan surrendered will be offered for sale by the War Assets Administration soon. As reported in the New York *Times*, only nonprofit institutions and certain types of priority claimants will be eligible to buy the hospitals. The three units, one comprising the complete equipment for a 1,000 bed hospital and the other two for 600 bed hospitals, will be sold only as complete units. Purchasers must agree not to resell them or any part of their equipment within three years without written permission from the War Assets Administration. Purchasers must agree that the units will be put to use as hospitals. Several smaller units already have been sold under prior arrangements to cities and counties urgently in need of medical facilities. One of these sales included a 100 bed "packaged" unit purchased by Salt Lake City for use as a hospital for crippled children.

"Equipped by the Navy with modern and efficient apparatus," War Assets Administration officials said that the units represent a prodigious effort of planning, procurement, organization and shipping. In assembling the units no repaired or revamped material was used. Everything is new. Packaged hospitals contain complete equipment such as cots, pajamas, books, office equipment, laundry machinery, precision surgical instruments, dental chairs, operating tables and the best available x-ray units. They contain enough supplies, in addition to standard equipment, to run at capacity for a six month period. They do not, however, include any building or service utilities.

The equipment assembled for a 1,000 bed "packaged" hospital filled about fifty standard freight cars. The 1,000 bed unit originally cost the government $250,000 and the 600 bed units cost $110,000 each. A 40 per cent discount on the fair value price will be allowed by the War Assets Administration to nonprofit and tax exempt institutions.

INTERNATIONAL CHILDREN'S FUND ORGANIZED

One of the closing actions of the fifth Council session of the United Nations Relief and Rehabilitation Administration, which adjourned August 16, at Geneva, Switzerland, was to establish an International Children's Fund for the care of minors in liberated countries. Supplies and funds left over from the liquidation of UNRRA beginning in October will be used along with contributions from the United States and forty-seven other member governments on UNRRA'S Council.

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Alabama

Cumbie, William G.....Troy
Dozier, Slater M.....Chance
Gross, George D.....Anniston
Guin, James C. Jr.....Brownville
Hardy, James D.....Montevallo
Harris, Reuben R.....Birmingham
Sheppard, John T.....Gadsden

Arizona

Bralliar, John S.....Wickenburg
Hastings, Robert E.....Tucson
Mikell, John S.....Tucson
Sauger, Stuart.....Tucson
Von Fohle, Charles L.....Chandler

Arkansas

Elders, John B.....Walnut Ridge
Greene, Horace T.....Little Rock

California

Adams, William L. Jr.....Fresno
Archibald, Vernon T.....Richmond
Arnold, George J.....Los Angeles
Auerbach, Joseph.....San Francisco
Bacher, John A.....San Francisco
Barnard, Leonard B.....Oakland
Beare, William K.....San Francisco
Beckerman, George E.....Santa Monica
Bell, Lloyd T.....Culver City
Benninger, Charles Jr.....Oroville
Bernstein, Maxwell R.....Pittsburgh
Buehler, John M.....Watsonville
Cadranee, Joseph L.....Los Angeles
Callaway, James W.....La Jolla
Canby, Charles B.....Alhambra
Carter, Robert V.....Tarzana
Ching, Samuel.....Victorville
Chong, Harry S.....Sacramento
Conlan, Francis J.....San Francisco
Cooper, Zaullie P.....Los Angeles
Davis, Aaron E.....Oakland
Dean, James S.....Los Angeles
Dozier, Dave F.....Sacramento
Ferrier, Philip K.....Berkeley
Fitzsimmons, Charles E...San Francisco
Gadwood, Bernard B.....Oakland
George, Lowell E.....Huntington Park
Groper, Morris J.....San Francisco
Gutekunst, Frederick W..San Bernardino
Ham, George H.....Glendale
Higuchi, James J.....San Jose
Hilliard, John W.....San Bernardino
Hollingsworth, Parker B..San Francisco
Hull, Osman H.....Los Angeles
Jaffe, Hyman.....Los Angeles
Jamentz, Albert H.....Pasadena
Kidd, Thomas R.....South Gate
Klausner, John T.....Los Angeles
Lenahan, George T.....San Francisco
Lewis, Julius.....Berkeley
McDowell, Bruce E.....Merced
McNaughton, James R.....Los Angeles
Maeth, David.....Santa Cruz
May, Stanton B.....Los Angeles
Merritt, Robert E.....San Francisco
Muller, Harold R.....Oakland
Nichols, James E. Jr.....Glendale
Prescott, Manfred U.....San Francisco
Reinsch, Paul J.....Los Angeles
Thomas, Grace F.....Palo Alto
Wiper, Thomas B.....Sausalito
Wood, Clyde O.....Los Angeles

Colorado

Bealm, Ernest L.....Canon City
Dixon, Robert K.....Denver
Harper, Frederick R.....Denver
Kearns, Harry J.....Cripple Creek
Phillippus, Theodore C.....Denver

Connecticut

Haberlin, Chester E.....Stratford

Delaware

Goleburn, Maurice.....Wilmington
(formerly Maurice Goldberg)
Mercer, Eugene H.....Dover

District of Columbia

Clader, Stanley C.....Washington
Devlin, William H.....Washington
Hughes, Charles R. Jr.....Washington
Leeper, Donald H. Jr.....Washington
Lide, Thomas N.....Washington
Mistretta, F. H.....Friendship Station
Ready, Thomas J.....Washington

Georgia

Allgood, John W. Jr.....Atlanta
Brown, Walter E.....Savannah
Crawford, John B.....Colquitt
Hancock, Sidney L.....Macon
Harris, Major H.....Decatur
Hicks, James M.....Brunswick
Woodail, Joseph D.....Lumpkin

Illinois

Allerton, Roy P.....Elgin
Alves, Walter P.....Benton
Baer, Walter H.....Peoria
Baker, Lyle A.....Hines
Ballou, John W.....Rushville
Bartelt, William F.....River Forest
Bauer, Frederick C. Jr.....Urbana
Becker, Maurice L.....Chicago
Bernstein, Alexander M.....Chicago
Brennan, Francis J.....De Pue
Burns, Gordon T.....Rockford
Casberg, Melvin A.....Park Ridge
Celia, Louis E.....Chicago
Childs, Barton.....Hinsdale
Collins, Nathan P.....Elgin
Cooper, George J.....Chicago
Crout, George T.....Flanagan
Daly, James J.....Chicago
D'Andrea, Maurice J.....Chicago
Dolan, Patrick T.....Pittsfield
Edelstein, Rudolph.....Chicago
Ehlert, Charles D.....Alton
Erikson, Herbert B.....Chicago
Fazio, Rocco J.....Chicago
Fial, Thaddeus C.....Chicago
Foster, John W.....Chicago
Friedman, Jack.....Chicago
Gaal, George.....Chicago
Gaetano, Charles P.....Hazelcrest
Gradman, Ralph.....Chicago
Gregory, Benjamin J.....Chicago
Guzauskas, Anthony C.....Aurora
Heaton, John R.....Hoopeston
Herzog, Max.....Chicago
Hollands, Robert A.....River Forest
Horner, Harry T.....Chicago
Hurwitz, Paul.....Chicago
Ingrish, George A.....Chicago
Ioriatti, John B.....Chicago
Johnston, Ray C.....East Peoria
Kahn, Sidney C.....Chicago
Kearney, Cletus T.....Gridley
Kwedar, Albert T.....Springfield
Langner, Mitchell E.....Chicago
Lynch, John D.....Media
McClay, Elmo T.....Springfield
McDonald, James H.....Aurora
Marquis, Neal J.....Sterling
Mennite, Nicholas M.....Chicago
Mock, Harry E. Jr.....Evanston
Mohardt, John H.....Chicago
Navin, James J.....Marion
Oliver, Wesley B.....Belvidere
Pennell, Melvin T.....East St. Louis
Pfisterer, William H.....Chicago
Pollack, Albert A.....Chicago
Rightman, Bert.....Chicago
Rottapel, David J.....Chicago

Illinois—Continued

Royce, Emery E.....Sparland
Schaeffer, Everett W.....Chicago
Scheman, Louis.....Chicago
Seidman, Leon H.....Chicago
Stone, Fred D.....Chicago
Tashman, Herbert.....Chicago
Vanderheide, Carel.....Chicago
Watson, Ernest S.....Elmhurst
Wojtowicz, Henry W.....Chicago
Zekman, Theodore N.....Chicago

Indiana

Luckett, Charles L.....Booneville
McLaughlin, James R.....Logansport
Miller, Ray D.....Indianapolis
Miller, Richard H.....Fort Wayne
Mishkin, Irving.....Elkhart
Young, Gerald S.....Muncie

Iowa

Chapman, Robert M.....Cedar Rapids
Cmeyla, Patrick M.....Sioux City
Getty, Everett B.....Primghar
Gurau, Henry H.....Des Moines
Hartman, Howard J.....Waterloo
Hartley, Byron D.....Mt. Pleasant

Kentucky

Hamilton, Joseph E.....Louisville
Moore, Roy H. Jr.....Louisville
Rosenberg, Theodore.....Paducah

Louisiana

Elkins, Oliver W.....Junction City
Hines, James E.....Alexandria
Kelleher, Robert C.....New Orleans
Mickal, Abe.....New Orleans

Maryland

Aronson, Abraham.....Perry Point
Briscoe, Phillip.....Mutual
Carroll, Douglas G. Jr....Brooklandville
Hopkins, James E. T.....Garrison

Massachusetts

Baldwin, Arthur D.....Wellesley
Barnes, Wayne C.....Longmeadow
Baver, Charles L.....Pittsfield
Blotnick, William.....Everett
Borenstine, Joseph.....Boston
Bornstein, Jacob.....Chelsea
Broderick, Edward O.....Needham
Brooks, Oscar D.....Roxbury
Chapin, Milan A.....Boston
Coll, James J.....Boston
Cottone, Peter P.....Marlboro
Dubin, Max.....Brighton
Dudis, Rober G.....Athol
Dunn, Paul E.....Westminister
Eichwald, Ernst J.....Boston
Fadgen, John F.....Clinton
Famiglietti, Joseph A.....East Boston
Fulton, Marshall N.....Boston
Haidak, Gerald L.....Pittsfield
Hartshorn, James W. S.....Springfield
Memery, Harry N.....Longmeadow
Michaelides, Paraskevas.....Fitchburg
Sartwell, Philip E.....Marblehead
Sheinkopf, Jacob.....Medway
Yavarow, Millin M.....Everett

Michigan

Alm, Bernhard T.....Dearborn
Alpern, Elliott B.....Highland Park
Asselin, Regis F.....Detroit
Balberor, Harry.....Detroit
Bolstad, Donald S.....Detroit
Bond, William W.....Monroe
Brenner, Ervin J.....Manistique
Browns, Herschel L.....Ann Arbor
Chipman, Elwood M.....Quincy

PHYSICIANS SEPARATED FROM SERVICE

Michigan—Continued

Conner, Edward D.....Detroit
Dobski, Edwin J.....Sylvan Village
Doerr, Louis E. Jr.....Detroit
Ferguson, James A.....Grand Rapids
Frederickson, George C. .....Detroit
Fuller, Harvey T.....Mt. Morris
Gaston, Herbert B.....Dearborn
Greenberg, Julius J.....Detroit
Hing, Ng William.....Flint
Johnson, Grant T.....Saulte Ste Marie
Kessler, Harold.....Alpena
Kirschbaum, Harry M.....Detroit
Koren, Louis.....Detroit
Kucmierz, Francis S.....Detroit
Lam, Francis L.....Battle Creek
McFadyen, Hugh H.....Ann Arbor
Mack, Harold C.....Detroit
Musselman, Merle M.....Ann Arbor
Ostrander, Robert A.....Ludington
Pasternacki, Arthur S.....Adrian
Ramsey, Jac A.....Alpena
Saunders, Allen.....Coldwater
Schwartzberg, Joseph A.....Detroit
Shelley, Walter B.....Detroit
Weeks, William F.....Ann Arbor
Woodyard, Richard L.....Detroit

Minnesota

Brown, Gordon A.....St. Paul
Bulinski, Theodore J.....St. Paul
Eginton, Charles T.....St. Paul
Emerson, George F.....Rochester
Grotting, John K.....South Minneapolis
Haigler, Samuel H.....Rochester
Havel, Thomas E.....Blue Earth
Hawkinson, Raymond P.....Robbinsdale
Henderson, John W.....Rochester
Messler, Joseph D.....Rochester

Mississippi

Burdine, Ira P.....Amory
Edwards, Boyd C.....Jackson
Melvin, Edmund A.....Gulfport

Missouri

Becker, Richard R.....Kansas City
Belot, Monti L.....Kansas City
Bredall, Jerome J.....Perryville
Cordonnier, Justin J.....University City
Cron, Heinz E.....St. Louis
Finkel, Barney W.....St. Louis
Gorelick, David F.....Columbia
Graul, Walter P.....St. Louis
Hawker, William D.....St. Louis
Herman, Morris.....St. Louis
Hummel, Anton J.....St. Louis
Jacob, Walter P.....Kansas City
Kyger, Edgar R., Jr.....Kansas City
Lederman, Joseph.....St. Louis
Miklozek, John E.....St. Louis
Mueller, Robert J.....St. Louis
Rosier, Harold A.....Belton
Senturia, Hyman R.....St. Louis
Thomas, Horace E.....Columbia
White, William H.....St. Louis

Nebraska

Andersen, Raymond R.....Nehawka
Byers, Robert C.....Fremont
Doneland, James P.....Omaha
Hoekstra, Clarence S.....Omaha
Miller, N. R.....Lincoln

New Jersey

Abraham, Albert E.....Arlington
Bass, Morris L.....Newark
Becker, Martin.....East Orange
Bourns, Edward G.....Westfield
Buckley, Jeremiah L.....Nutley
Chernus, Jack.....Newark
Cohen, Abraham D.....Jersey City
Crecca, Joseph V.....Newark
DeBiaso, Cornelius V.....Rutherford

New Jersey—Continued

Erdman, George L.....Newark
Esty, Geoffrey W.....Westfield
Farrell, Edgar A.....Haddonfield
Fitzpatrick, Leo J.....Ridgefield Park
Geller, Joseph J.....Elizabeth
Halpern, Melvin M.....Newark
Haub, Carl F.....Haddon Heights
Kun, Bertram B.....Jersey City
Lee, William A.....Jersey City
Lilien, Milton.....Newark
McLaughlin, John T.....Pleasantville
Mann, Benjamin.....Perth Amboy
Marshall, Frank A.....Wechawken
Nicholson, Joseph T. L..New Brunswick
Pasquale, Thomas L.....Newark
Prince, Samuel.....Union City
Raab, Michael.....Passaic
Schwartz, Leon J.....Greenwich
Willner, Milton M.....Newark

New York

Adelmann, Jerome.....Brooklyn
Adler, Morris H.....Flushing
Anfanger, Ludwig A.....Jackson Heights
Angioletti, Louis V.....Fort Lee
Ascione, Joseph F.....Flushing L. I.
Axselrod, Edward.....Glen Cove
Baker, Richard B...Jackson Hgts., L. I.
Banas, Charles F.....Buffalo
Bauer, Charles E.....Poughkeepsie
Becker, Frederick P.....Brooklyn
Bell, William R.....Baldwin
Benjamin, Bernard.....Brooklyn
Bernstein, Mayer.....New York
Birnbaum, George L.....Woodside, L. I.
Blau, Saul J.....Brooklyn
Blecher, Irving E.....Brooklyn
Bloch, Norman R.....New York
Bloom, Samuel.....Brooklyn
Bolton, Leonard J.....Dannemora
Brandriss, Joseph.....Brooklyn
Brewer, Wilfred R.....New York
Brillinger, Fred.....Peekskill
Butera, Domine G.....Brooklyn
Calta, Robert.....Staten Island
Carone, Pasquale A.....Brooklyn
Catalano, Charles P.....New York
Chess, Rudolph.....Brooklyn
Cohan, Samuel R.....Brooklyn
Collins, Robert J.....Syracuse
Connolly, William A.....Rochester
Constantine, Anthony B.....Buffalo
Corbett, Austin J.....Green Island
Criscillo, Anthony J.....Bronx
Daly, John N.....Schenectady
Del Bello, Louis S.....Forestville
Delit, Clement.....Flushing, L. I.
D'Errico, Armand J.....Gloversville
DeTrano, Joseph R.....Jamaica
Dittman, Hyman.....Bronx
Dobkins, John J.....Staten Island
Dubrow, Hilliard.....New York City
Eistation, Thomas D.....Staten Island
Ellman, Alexander.....Brooklyn
Evans, David S.....West Brentwood
Failla, John A.....New York
Failla, Salvatore C...Ridgewood, Queens
Farnham, Raymond K.....Scarsdale
Faso, Joseph M.....Portland
Finkelstein, Hyman M.....Bronx
Finklestein, Paul.....Brooklyn
Forrester, Ernest H.....Floral Park
Franco, Angelo A.....Brooklyn
Frank, Irving.....New York
Freedman, Henry L.....Brooklyn
Freund, Arthur M.....Bronx
Friedman, Bernard.....New York
Gardy, Lawrence A.....New York
Garson, Percy.....Peekskill
Gartner, Harold.....Valhalla
Gay, Charles F.....Brockport
Gialanella, Gaetano....Long Island City
Gilkes, DeLisle F.....Brooklyn

New York—Continued

Gilligan, Thomas J. Jr.....New Rochelle
Ginsberg, Jacob R.....Brooklyn
Giordano, Gaetano T.....Endicott
Glaubitz, John P.....Baldwin
Glickman, Daniel B.....New York
Glotzer, Solomon.....Brooklyn
Gold, Max.....Brooklyn
Goldberg, Harry.....Brooklyn
Gore, Ira.....Brooklyn
Graber, Irving.....Brooklyn
Gray, James H. Jr.....Springville
Green, Henry.....Staten Island
Greenberg, Leon I.....New York
Greene, Fay P.....New Orleans
Halpern, Morton M.....Brooklyn
Hamilton, George J.....New York
Hauser, Saul S.....Brooklyn
Havens, Frederick M.....Newfane
Healy, Edward G.....Buffalo
Heiligman, Raymond.....New York
Hermann, Harold B.....Brooklyn
Hertzman, Charles.....New York
Hornig, George R.....Glen Head, L. I.
Hulse, Wilfred C.....New York
Humphrey Marvin A.....Schenectady
Isaacson, Bernard.....Bronx
Jaeger, Jacob O. S.....Bronx
Jarrett, William A.....Herkimer
Josephson, George P.....Maspeth
Kennett, Donald M.....Massapequa
Kirsten, Eugene.....Bronx
Krakauer, Samuel A.....New York
Kremer, Herman S.....Staten Island
Leeds, Leonard W.....Brooklyn
Lefft, Harold H.....New York
Levine, Sanford.....Brooklyn
Levinson, Meyer D.....Brooklyn
Levy, Fred.....New York
Lhowe, Joseph R.....New York
Lindenberg, Paul.....New York
Lo Balbo, Benedetto A.....New York
Love, Freeman D.....Brooklyn
Lustig, Saul.....Brooklyn
McCaster, Joseph T.....New York
McGee, Hugh E.....Jeffersonville
Maillard, Leslie W.....Flushing
Malarkey, Edward E...W. New Brighton
Marcus, Herbert R.....Bronx
Marshall, Louis E.....Brooklyn
Matis, Jacob D.....New York
Mattucci, Silvio A.....New York
Mittlefehldt, Myrton G.....Buffalo
Moolten, Sylvan E.....New York
Murray, William F.....Hempstead
Naidorf, Carroll P.....Brooklyn
Novalis, Nicholas A.....Long Island
O'Connor, Daniel J.....Brooklyn
Pazow, Lee.....Bronx
Persico, Anthony J.....New York
Preiss, Aaron L.....New York
Pulsifer, Libby.....Rochester
Rabinowitz, Samuel J.....Bronx
Reisner, Edward H. Jr.....New York
Rinaldi, Dominick T.....Brooklyn
Rose, Wilber S.....Scotia
Rosenberg, Conrad.....New York
Ryan, Edward D.....Brooklyn
Samuels, Norman A.....New York
Sandler, Hyman.....New York
Scott, John B.....Marlboro
Seltz, Herman.....Brooklyn
Siragusa, Joseph A.....Bronx
Snell, Horace A.....Albany
Sornberger, Charles F.....Cortland
Sporn, Hyman.....Brooklyn
Tenke, Julius Jr.....Glen Cove
Tenzer, Seymour.....New York
Warner, Robert C.....Gloversville
Way, George T. C.....Albany
Wilson, David A. W.....Rye
Winkelstein, Lawrence B....Mt. Vernon
Zankel, Harry T.....Brooklyn
Zoll, John G.....Buffalo

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PHYSICIANS SEPARATED FROM SERVICE

North Carolina

Arnold, Ralph A.....Durham
Barefoot, William F.....Wilmington
Benson, Norman O.....Lumberton
Beverly, Squire S.....Oteen
Blanchard, Irwin T.....Tarboro
Cooley, Samuel S.....Black Mountain
Crawford, Joseph B.....Goldboro
Creech, Oscar J.....Ahoskie
Davis, William H.....Asheville
DeCamp, Allen L.....Fayetteville
Dockery, Robert W.....Statesville
Fowler, Franklin T.....Hendersonville
Glasser, John W. H.....Graham
Grady, Franklin M.....New Bern
Graham, Walter R.....E. Charlotte
Herrin, Hermon K.....Gastonia
Jervey, William St. J.....Tryon
Lawson, George W.....Graham
Lucido, Joseph L.....Elkin
Mumford, Ander M.....Ayden
Neal, Rutherford D.....Ruffin
Parrott, Frank S.....Goldsboro
Register, John F.....Greensboro
Robertson, Carroll B.....Jackson
Robertson, Logan T.....Asheville

North Dakota

Eiriksson, Charles E.....Cavalier
Elsworth, John N.....Bismarck
Freeman, Donald W.....Bottineau
Gaebe, Laurence C.....New Salem
McCurdy, Robert G.....Bismarck
O'Brien, Louis T.....Wahpton
Ransom, Henry R.....Grand Forks
Williams, Mark F.....Linton

Ohio

Abel, Samuel E.....Chillicothe
Abrams, Nathan R.....Cincinnati
Belinky, Nathan D.....Youngstown
Bell, Paul L.....Toledo
Bennie, William T.....Cleveland
Borer, Raymond J.....Toledo
Bowman, Earl B.....Cincinnati
Breitbart, Raymond.....Middletown
Breneman, Roscoe H.....Akron
Breyfogle, Ernest E.....Akron
Burnstine, Marcus D.....Columbus
Carney, Wilfred I.....Youngstown
Cava, Jasper F.....Mingo Junction
Devanney, John W. Jr.....Cincinnati
Dillahunt, Paul H.....Columbus
Dillon, Lowell O.....Lima
Doeing, Carl T.....Springfield
Downey, Frank S.....Sidney
Dummer, Clyde M.....Cincinnati
Egolf, Charles F.....Cincinnati
Essig, Joel A.....Cincinnati
Forney, Robert L.....Cincinnati
Fox, Ernest L.....Dayton
Frederick, Lewis O. Jr.....Osborn
Friedlander, Joseph W.....Cleveland
Greenberg, Marcel.....Cleveland
Griffing, Waller H.....Cincinnati
Hankinson, Dorence O.....Columbus
Harrison, George M.....Columbus
Heimann, Joseph V.....Lakewood
Herbert, Thomas J.....Portsmouth
Herbst, Mark G.....Canton
Hoodin, Abraham.....Miles
Hoover, Reuben B.....Columbus
Janney, James R.....Baltimore
Jenkins, Carl S.....Wilberforce
Jennings, William P.....Cincinnati
Keller, Morris W.....Cleveland Hts.
Kezur, Edward.....Cincinnati
Kohn, Howard D.....Shaker Heights
Kubicek, William F.....Independence
Kumpe, Carl W.....Hillsboro
LaHood, Michael J.....Martins Ferry
Large, Henry R.....Cleveland
Lemon, George H.....Fayette
Liebschner, William R.....Deshler

Ohio—Continued

Lieser, William A.....Canton
McCarthy, Justin E.....Cincinnati
McNambe, Regis J.....Cleveland
Marks, Moses I.....Cleveland
Marlow, Charles.....Toledo
Miller, Harold N.....Cleveland
Must, Burton G.....Dayton
Neal, William J.....Archbold
Niple, Richard A.....Columbus
Nipple, Vincent C.....Midvale
Odom, Robert E.....Youngstown
Ormond, Alexander P.....Cuyahoga Falls
Page, Robert O.....Lima
Parry, Thayer L.....Akron
Pemberton, Paul A.....Cleveland
Pinney, Dean C. Jr.....Cuyahoga
Quinn, Robert E.....Chillicothe
Rankin, Thomas J.....Oxford
Rudolph, John F. Jr.....Warren
Sanders, Edward W.....Bellevue
Schilling, Carl F.....Cincinnati
Shulman, Leon M.....Steubenville
Sisek, Henry.....Youngstown
Tillotson, John F.....Lima
Williams, Lester L.....Mt. Vernon
Wine, Charles R.....Dayton
Yingling, Walter E.....Lima
Yohe, Forrest R.....Bellevue
Young, Edward B.....Lima
Zantini, William G. Jr.....Cleveland
Zeller, Ross M.....Greenville

Oklahoma

Adams, Felix M. Jr.....Vinita
Akins, Jack O.....Tulsa
Anderson, Hubert M.....Oklahoma City
Battenfield, John Y.....Oklahoma City
Duewall, Rudolph H.....Durant
Hardman, Thomas J.....Tulsa
Hewitt, Perry E. Jr.....Muskogee
Joyce, Frank T.....Chickasha
Matt, John G.....Tulsa
Poole, Warren B.....Oklahoma City
Shipp, Jesse D.....Tulsa

Oregon

Barr, Richard H.....Portland
Baughman, Howard E.....Eugene
Baum, William W.....Salem
Bischoff, Theodore M.....Portland
Clisby, Keith M.....Portland
Gable, James J. Jr.....Portland
McClintic, James K.....Portland
Prag, Ralph M.....Portland

Pennsylvania

Alcorn, Lemuel C.....North East
Alexander, David B.....Pottstown
Arany, Laszlo S.....Chambersburg
Bailey, Walter H.....Leechburg
Balsis, Bernard A.....Morrisville
Barr, Samuel S.....Philadelphia
Beamer, William D.....Drexel Hills
Bender, William A.....Chambersburg
Bloom, Meyer.....Johnston
Boal, William E. S.....Freedom
Boger, John D.....Lebanon
Braden, Robert G.....Oliphant Furnace
Bradshaw, Homer V.....Pittsburgh
Brehm, William F. Jr.....Franklin
Brennan, William F.....Edgewood
Britt, Edward C.....Philadelphia
Bush, William M.....Reading
Butters, Justin G.....Corry
Butz, Alfred S.....Philadelphia
Callahan, Andrew III.....Philadelphia
Canon, Thomas E.....Pittsburgh
Carman, William G.....Mount Lebanon
Chain, William T.....Narbarth
Chalfant, Chads O.....Donora
Coloviras, George J. Jr.....Camp Hill
Concello, Joseph A.....Chester
Cook, William L. Jr.....Pittsburgh

Pennsylvania—Continued

Curtin, John J.....Philadelphia
D'Alonzo, Walter A.....Philadelphia
Damiani, Alfred S.....Philadelphia
Di Rocco, Vincent P.....Philadelphia
Dobyns, William F.....Pittsburgh
Docktor, John P.....Ellsworth
Dry, Frederick A.....Kutztown
Dumke, Paul R.....Philadelphia
Duncan, John J.....Philadelphia
Egoville, John W.....Philadelphia
Eichelberger, Eli.....York
Evashwick, George.....Turtle Creek
Fitzsimmons, William R.....Zelienople
Flinn, James E. Jr.....Pittsburgh
Foust, Tilman H.....Milton
Frolo, Gregory F.....Philadelphia
Galbreath, William R.....Bloomsburg
Gibbons, Robert F.....Dunmore
Giering, John F.....Wilkes-Barre
Grana, Philip C.....Harrisburg
Grau, John K.....Beaver Falls
Greenstein, Raphael H.....Philadelphia
Hanlon, David G.....Hazelton
Hayes, Merrill B.....Upland
Heisley, Rowland S.....Honesdale
Henson, Edward V.....Nanticoke
Hinkel, Charles L.....Harrisburg
Hinman, Louis F.....Aldan
Hoachlander, Eldon G.....Greencastle
Huff, Samuel G.....Eldred
Hughes, Roger L.....Philadelphia
Hunt, Andrew D., Jr.....Haverford
Hykes, James I.....Ardmore
Johnson, Robert C.....Allison
Jose, John F.....Curtisville
Kimmelman, David B.....Philadelphia
Kirkpatrick, Samuel A..New Cumberland
Kitchen, William W.....Philadelphia
Kostyal, John I.....Pittsburgh
Kraft, Richard D.....Johnstown
Kravitz, Charles H.....Philadelphia
Labess, Morris.....Philadelphia
Lachman, Bernard E.....Oil City
Ladden, Paul A.....Philadelphia
Levine, Leo A.....Oil City
Lewis, William H.....Sewickley
Light, John J. B.....Lebanon
Losasso, Dominic E.....Vandergrift
MacKinnon, Sterling A.....Narberth
Maher, Regis M.....Uniontown
Maloney, Daniel D.....Saegertown
Markle, Joseph G. B.....Philadelphia
Mathias, Mervin A.....Philadelphia
Mazaleski, Stanley C.....Old Forge
Mentzer, John Harold.....Denver
Miller, Orden E.....Springs
Milnamow, Paul T.....Wilkes-Barre
Moyer, Forest G.....New Tripoli
Newman, William H. Jr...Clark's Green
Nicholson, Richard E.....Philadelphia
Nigborowicz, Thaddeus A.....Gallitzin
Patrick, Nicholas E.....Scranton
Penn, Samuel E.....Pittsburgh
Perchonock, Solomon.....Philadelphia
Persing, Amos V. Jr.....Watsontown
Peters, Edwin S.....Masontown
Plesset, Marvin R.....Pittsburgh
Purvis, James D...North Side Pittsburgh
Quashnock, Joseph M.....Pittsburgh
Ralston, Louis G.....Slippery Rock
Roseman, Ralph B.....Philadelphia
Ross, John T. Jr.....Philadelphia
Sano, Machteld E.....Philadelphia
Schiowitz, Albert.....Wilkes Barre
Schwartzman, Joel J.....Philadelphia
Seifer, Arthur F.....Philadelphia
Shiarella, Paul C.....New Kensington
Tomarelli, Raymond C.....Pittsburgh
Updegraff, Harry B.....Pittsburgh
Wallace, Stanley K.....Larksville
Wilt, Harold L.....Brownsville
Winn, Charles.....Chester
Wright, David G.....Philadelphia

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PHYSICIANS SEPARATED FROM SERVICE

Rhode Island

Boucher, Reginald H.....N. Providence
Brown, Ralph E. Jr.....Providence
Burton, Kenneth G.....Providence
Clark, Samuel D.....Bristol
De Stefani, Carlo J. Jr.....Forestdale
Moore, Kenneth T.....Providence
Nolan, John O. F.....Providence
Reeves, James A.....Cranston
Schoenbucher, Albert K.....Providence
Stone, Eric P.....Providence
Turner, Henry E.....Newport

South Carolina

Brown, Ralph E.....Barnwell
Brunson, Francis A.....Sumter
Cox, Marcus E.....Charleston
Eaddy, Norman O.....Sumter
Kinder, Emory C.....Kingstree
McLean, Jewell W.....Greenville
Morehouse, William G.....Columbia
Taylor, James A.....Florence
Yeargin, Charles E.....Laurens

South Dakota

Donley, Charles E.....Scotland
Crawford, James H.....Watertown

Tennessee

Adams, John W. Jr.....Nashville
Anderson, John W.....Nashville
Ayres, John C. Jr.....Memphis
Borg, Charles W.....Memphis
Chew, Nathaniel J.....Bristol
Davis, Robert W. Jr.....Nashville
Garner, Washington E.....Nashville
Gray, Horace D.....Memphis
Hanna, Jefferson A.....Memphis
Hill, Otho R.....Lebanon
Howard, Beverly R.....Kingsport
Lawson, Robert F.....Memphis
McCown, Robert E.....Fayetteville
McDaniel, Elmer F. Jr.....Memphis
McSwain, George H.....Paris
Malone, William B. II.....Memphis
Marshall, Ben H.....Fayetteville
Moeller, Benjamin A.....Memphis
Ray, Russell B.....Memphis
Segerson, Edward C.....Memphis
Seligman, Maurice.....Nashville
Whitfield, Joseph T.....Nashville

Texas

Allen, George B.....El Paso
Anderson, Elmo D.....Dallas
Archer, James T. Jr.....Houston
Arledge, Robert M.....San Angelo
Arrington, John H. Jr.....Wichita Falls
Avent, Woodrow M.....Rosebud
Axelrod, William.....Houston
Bagwell, John S.....Dallas
Barrett, Maurice E.....Fort Stockton
Beavers, Alonzo J. Jr.....Azle
Bergman, Sol H.....Livingston
Blair, James R. Jr.....Big Spring
Bodenhamer, James G.....Odessa
Bravo-Fernandez, Enrique J.....Galveston
Brewer, Thomas W.....Houston
Brown, Samuel R.....Dallas
Brown, William W. Jr.....Dallas
Burnside, Ronald M.....Dallas
Campbell, George M.....Nacogdoches
Carruthers, Frank S.....Commerce
Carter, James W. Jr.....El Paso
Clark, Richard G.....Gainesville
Clayton, Stanley I.....Fort Worth
Dawson, Ralph B.....Fort Worth
Denton, Guy T. Jr.....Dallas
Fuqua, William N. Jr.....Dallas
Goolsby, Carl B.....Crockett
Hamer, James G.....Shamrock
Harris, Calvin W.....San Antonio
Harris, Woodson W.....Houston
Heck, William H.....San Antonio
Hernandez, Moises S.....Witchita Falls

Texas—Continued

Holland, Clell G.....Houston
Howze, Jo W.....Pampa
Jones, William E.....Mesquite
Langner, Charles A. G.....Brownsville
Lewis, Robert L. Jr.....Paris
Lubben, John F., Jr.....Dallas
Maddox, Azzie D.....Dallas
Manske, Arnold O.....Waco
Moody, Charles O.....Coleman
Orr, Charles W.....Houston
Rabinowitz, George-E.....San Antonio
Reed, Roy W.....Houston
Scarborough, James S.....Rusk
Secrest, Pettus G. Jr.....Bay City
Shepard, Groom S.....Alexander
Siever, James M.....Dallas
Williams, Robert W.....Shiner

Utah

Barker, Harold G.....Salt Lake City
Scuderi, John J.....Salt Lake City

Vermont

Corsones, Peter D.....Rutland
Meunier, John L.....Springfield

Virginia

Bailey, James P.....Hampton
Baynard, Melvin G.....Emporia
Beckwith, Julian R.....Clifton Forge
Bowman, Wilbur M.....Petersburg
Britt, Louis P. Jr.....Richmond
Brown, Leo R.....Newport News
Butler, Raymond K.....Madison
Caffey, Eugene M. Jr.....Charlottesville
Chairsell, Julius F. Jr.....Christiansburg
Davis, Hal.....Roanoke
Delap, Lyle E.....Radford
Dillard, Peter H.....Richmond
Hardy, Paul H. Jr.....Harrisonburg
Jefferies, William M.....Richmond
Johnson, Marcellus A. Jr.....Roanoke
Leo, Louis S.....Norfolk
McKee, Edward T.....Norfolk
Mann, Joseph L.....Hampton
Moore, Frederic P. II.....Richmond
Nuckols, Irwin M.....Mount Sidney
Ogus, Alfred.....Norton
Painter, Thomas E.....Pulaski
Still, Joseph W.....Arlington
Wingfield, William L.....Ashland
Wood, Henry W. Jr.....Shawsville
Wright, Fletcher J. Jr.....Petersburg

Washington

Abraham, John T.....Wenatchee
Allen, Robert D.....Seattle
Behrns, Russell K.....Mount Vernon
Burk, Cecil E.....Roslyn
Case, Edward F.....Seattle
Corlett, Donald D.....Seattle
Curry, Frank F.....Marysville
Day, Charles G.....Seattle
Foster, Robert F.....Seattle
Hopkins, Howard L.....Leavenworth
Kraabel, Donovan O.....Seattle
Litvin, Lewis E.....North Seattle
Munger, Irvia C. Jr.....Vancouver
North, Charles Q.....Seattle
Phillips, Robert M.....Spokane
Plastino, John B.....Spokane
Reynolds, Chris C.....Tacoma
Wolf, Clare C.....Tacoma

West Virginia

Asch, James T.....Parkersburg
Biddle, Robert M.....Parkersburg
Blair, Holmes.....Parkersburg
Bowers, John A.....Welch
Bundy, Walter E. Jr.....Oak Hill
Butte, Clarence I. Jr.....Elkhorn
Carp, Jack S.....Parkersburg
Coffey, Francis L.....Huntington

West Virginia—Continued

Coffman, Harry F. II.....Keyser
Gocke, Jack T.....Clarksburg
Hancock, Homer J.....Welch
Hegner, Hermann L.....Wellsburg
Houck, Claude L.....Carbon
Lambert, Luther R.....Charleston
McIntire, Thornton S.....Morgantown
McMillan, Marcy E. Jr.....Clarksburg
Polan, Charles M.....Huntington
Poole, Frank E.....Clay
Rich, Herman A.....Morgantown
Shepherd, Edwin M.....Charleston
Yurko, Anthony A.....Hollidays Cove

Wisconsin

Adler, Sidney J.....Milwaukee
Babbitz, Sidney G.....Milwaukee
Behnke, George A.....Oshkosh
Biljan, Matthew W.....West Allis
Bohorfoush, Joseph G.....Madison
Boock, Robert F.....Waterloo
Buckley, Clarence H.....Menomonie
Christiansen, Wilmer H.....Oshkosh
Clark, Eugene V. Jr.....Fond Du Lac
Darby, Russell C.....Mishicot
Dawson, (Lorin) D.....Rice Lake
Dietz, Paul C.....Milwaukee
Driessel, Richard H.....West Bend
Faber, Charles A.....Milwaukee
Feldmayer, James E.....Burlington
Fine, Jacob M.....Cudahy
Garrison, Rogers E...Wisconsin Rapids
Giffin, Walter S.....Appleton
Gmeiner, James E.....Appleton
Gottlieb, Abraham M.....Wood
Gutheil, Byron W.....Sun Prairie
Hidde, Frederick G.....Sheboygan
Huibregtse, Willard G.....Sheboygan
Hulse, Roy A.....North Fond
Hultman, Carl A.....Milwaukee
Johnson, Paul A.....Grantsburg
Kelley, Joseph F.....Janesville
Landis, Ralph V.....Appleton
Malec, John P.....Madison
Marcus, Richard E.....Milwaukee
Meboe, Joseph.....Onalaska
Meeter, Urquhart L.....Oshkosh
Moore, Robert M.....Sparta
Morris, Charles R.....Washburn
Okagaki, Henry I.....Madison
Pearson, John B.....Mayville
Reynolds, Gordon W.....Oshkosh
Trier, Paul J.....Fond du Lac
Vaccaro, Joseph E.....Milwaukee

Wyoming

Darrah, John R.....Cody

Puerto Rico

Acevedo-Defillo, Carlos E.....Lares
Bayonet, Natalio.....San Juan
Blanco, Rafael A.....Lajas
Busquets, Antonio R.....Jauana Diaz
Buxeda, Angel R.....Ensenada
Canino, Fernando M.....Aibonito
Casanova-Dias, Jose R.....Bayamon
Casanova-Diaz, Angel S.....Hato Rey
Colon, Rivera E.....Rio Piedras
Davila, Julio E.....Rio Piedras
Davila-Lopez, Jose G.....Guaynabo
Dominguez, Rafael H.....Humacao
Lopez-Elias, Francisco.....Arecibo
Lopez-Sanabria, Ulises.....San Juan
Mendez, Nestor H.....Santurce
Monserrate, Fernando M.....Rio Piedras
Montilla, Victor J.....Santurce
Novoa, Miguel.....Caguas
Perez, Enrique.....Santurce
Ramirez, Smith K.....Aquadilla
Silva, Euripides.....Miramar Santurce

Canal Zone

Gottlieb, Leon S.....Catun

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MEDICAL OFFICERS RELEASED BY THE NAVY

NAVAL RESERVE MEDICAL OFFICERS RECOMMENDED FOR RELEASE FROM ACTIVE DUTY

Delaware

Guilfoyle, Edward J.....Roselle

Massachusetts

Bounakes, George J.....Fall River
Bradley, Robert F. Jr.....Dedham
Callow, Allan D.....Revere
Clancy, George F.....Marlboro
Feldman, Samuel R.....Springfield
Finnerty, Edmund F. Jr....Chestnut Hill
Freni, Dominic R.....Swampscott
Gritsavage, Clem E.....Lowell
Jellis, Walter.....West Somerville
Lenson, Norman.....Dorchester
McKinnon, William J.....Westminster
Mikal, Stanley J. J.....South Boston
Murphy, Joseph F.....Worcester
Nakashian, Michael C.....Medford
Peters, John H.....Boston
Petrone, Francis J.....Fall River
Trodella, George P.....Somerville

Michigan

Barbour, Fleming A.....Flint
Capano, Oreste A.....Detroit
Clark, Dayton R.....Detroit
Day, Jay C.....Detroit
Feeley, Marshall J.....Detroit
Fenner, William G.....Detroit
Flett, Richard O.....Millington
Hoffman, Theodore E.....Vassar
Hoffs, Albertus J.....Grand Rapids
Jeremias, Robert C.....Royal Oak
Kromer, Robert A.....Ann Arbor
Thompson, Arthur L.....Detroit
Vander Velde, Kenneth M.....Detroit

Minnesota

Danford, Kenneth A.....Minneapolis
Gustason, Harold T.....Minneapolis
Johnson, Edward A.....Trumann
Juers, Edward H.....Red Wing
Nixon, James B.....Minneapolis
Pearson, Roy T.....Minneapolis
Peterson, Carrell A.....Warren
Peterson, Elroy R.....St. Paul
Peterson, Herbert W.....Minneapolis
Roberts, Oliver W.....Owatonna
Snider, Gordon G.....Rochester
Wilson, George T.....Rochester

Nebraska

Blakeney, James R.....Omaha
Embick, James F.....Laurel
Fuenning, Samuel I.....Lincoln
Johnson, Myron C.....Valparaiso
Lawton, Richard L.....Omaha
Owen, Roger D.....Omaha
Weber, Daniel J.....Omaha
Wiley, Stuart P.....Imperial

New Jersey

Apple, Stanley B.....Trenton
Coggleshall, Bayard.....Morristown
Crist, Walter A.....West Collingswood
Cushman, George L.....West Englewood
Delany, George J.....Palisades Park
Eastwood, Frederick T.....Burlington
Gregory, John R.....Plainfield
Himadi, George M.....North Plainfield
Hyland, Michael J.....South Orange
Kakascik, Emil J.....Garfield
Miller, James H. Jr.....Atlantic City
Miller, Ralph K.....Paterson
Reed, Howard B.....Princeton
Rogers, Charles A.....Upper Montclair
Roh, Robert F.....Westfield
Stearns, Kendall.....South Orange
Yolton, Cuthbert R.....Greyston Park

New York

Abrams, Joseph.....Lynbrook
Austen, Willard E.....New York
Bang, Edgar P.....Flushing, L. I.
Danforth, David N.....New York
Davidson, David.....Brooklyn
Den Dulk, Fred W.....New York
DeNigris, Louis T.....Bronx
Dietz, Julius H. Jr.....New York
Dinardo, Quentin E.....Schenectady
Evans, Willis F.....New York
Faaland, Halvdan G. K...4....Brooklyn
Fair, George L.....Syosset, L. I.
Falcone, Joseph W.....Brooklyn
Follette, William J.....Kenmore
George, Warren E. Sr.....Rochester
Havrilla, Raymond A.....New York
Holmes, Hilary H.....Pelham Manor
Hopping, Richard A.....Rochester
Horsfall, Frank L. Jr...Whitestone, L. I.
Kazutow, John.....Troy
Konefal, John J.....Brooklyn
Latona, Joseph H.....Niagara Falls
Laurence, John G.....Baldwin
Martin, Frederick J.....Irondequoit
Martin, John R.....Bronx
Mascatello, Antonio V.....New York
Murphy, Frank J. Jr.....Poughkeepsie
Naruszewicz, Vitold T.....Dunkirk
Norrington, Eric G.....Rye
Ohnysty, John.....Brooklyn
Pfaff, Robert A.....Old Forge
Rapp, Milton H.....Brooklyn
Rook, Francis L.....Kenmore
Ross, Donald M.....Poughkeepsie
Roth, Laurence G.....Batavia
Shepherd, Allen E.....Staten Island
Slater, Irwin H.....Brooklyn
Spille, Harold F.....Brooklyn
Spock, Benjamin M.....New York
Stevens, Douglas B.....Scarsdale
Tyrrell, Thomas I.....Troy
Walker, William W.....Bronx

North Carolina

Alley, Ralph D.....Burlington
Cates, Banks R. Jr.....Durham
Fowlkes, William M. Jr.....Enfield
Gobble, Fleetus L. Jr.....Winston-Salem
Guyton, Eugene D.....Florence
Huth, Peter E.....Sumter
Trincher, Irvin H.....Charlotte

North Dakota

Laskowski, Edward J.....Bismarck

Ohio

Ahlering, William C.....Norwood
Angerman, Robert H.....Massillon
Beery, Emerson B.....Lima
Eckhardt, Burnell F.....Cleveland
Everhart, Richard I.....Columbus
Goldcamp, Joseph H.....Salem
Haines, Richard D.....Salem
Hopple, Theron L.....Toledo
Hulit, Bob E.....Ashland
Koehler, Richard S.....Dayton
Leahy, Richard A.....Tiffin
Lehrer, David R.....Sandusky
Lucas, Donald B.....Kalida
Miller, John P.....Strasburg
Moore, Jeffery P.....Cincinnati
Richards, Edwin D.....Bay Village
Shorten, Edward A.....Youngstown
Simpson, James R. Jr.....Hamilton
Talbot, David R.....Mansfield
Uthoff, Carl W.....Williston
Voglewede, William C.....Toledo
Weisberger, Austin S.....Cleveland
Wendelken, Harold W.....Kent

Oregon

Catlow, Charles E. Jr.....Portland
Davis, Harold E.....Portland
De Alvarez-Skinner, R. R.....Portland
Homann, Paul H.....Portland
Hurley, Melvin T.....Salem
Kirchhof, Anton C.....Portland
Lancefield, Stuart M.....Salem
Lebold, Edward A.....Salem
Woolley, Paul V.....Portland

Pennsylvania

Albright, Robert W.....Reading
Bashline, Harry W.....Grove City
Carnwath, John W.....Abington
Davey, James R. Jr.....Easton
Gettes, Bernard C.....Philadelphia
Hartman, Harry S. III.....Library
Hoyt, Creig S.....Grove City
Jonas, Karl C.....Bala
Marshall, Robert B. Jr.....Philadelphia
Masson, Newton L.....Mercer
Puncheon, Robert L.....Philadelphia
Rugh, Philo W.....South Fork
Seiferth, William J.....Etna
Shafer, William A.....Pittsburgh
Szylejko, Henrik W.....Philadelphia
Taylor, James S. Jr.....Holidaysburg
Wolff, Charles R.....Pittsburgh

Texas

Adams, James N.....Longview
Barnett, Lewis B.....Hereford
Bernard, George E.....San Antonio
Cogburn, Harold N.....Lubbock
Fuste, Carlos E. Jr.....Galveston
Jones, Roy V. Jr.....Big Springs
Keith, Luther M. Jr.....Lubbock
Marsh, George B. Jr.....Austin
Piranio, Joe C.....Dallas
Seale, Francis E.....Dimmitt
Tabb, Kenneth S.....Waco
Tennison, George D.....Houston
Ware, Drue O. D.....Fort Worth
Wolma, Fred J. Jr.....San Antonio

Virginia

Alsop, Joseph F.....Appomattox
Frieden, Julian H.....Norfolk
Hurt, Algernon S. Jr.....Richmond
Irving, Edward P.....Norfolk
Rulon, David B.....Waynesboro
Shouse, Samuel S.....Appomattox
Weiner, Robert G.....Portsmouth

Washington

Asbury, Frederick R.....Puyallup
Backman, Vernal G.....Seattle
Cowan, Walter G.....Walla Walla
Jensen, Ole J. Jr.....Seattle
Maguire, Joseph P.....Seattle

West Virginia

Adams, John Q.....Huntington
Farley, James A.....Huntington
Gilmore, William E.....Wheeling
Humphrey, Edwin J. Jr.....Huntington
Lee, Ferdinand W.....Morgantown
McKee, John S. Jr.....Morgantown
Neal, William L.....Huntington
Stiles, Harlan A.....Huntington
Thompson, Carl T.....Morgantown

Wisconsin

Kurten, Louis J.....Milwaukee
Manson, Arnold I.....Milwaukee
O'Meara, Mark T.....West Bend
Quisling, Rolf A.....Madison
Rounds, Wayne M.....Wausaw
Schwei, George P.....Milwaukee

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Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Meeting of Pathologists.—The newly organized Alabama Association of Pathologists held its first scientific session at the Medical College of Alabama, Birmingham, September 21. Dr. Wiley D. Forbus, professor of pathology, Duke University School of Medicine, Durham, N. C., opened the meeting with an address on "Hodgkin's Disease and Its Suggested Relationship to Brucellosis." Other speakers on the program included Drs. Roger D. Baker, Ralph McBurney, Jasper D. Bush Jr. and Albert E. Casey, all of Birmingham. One session was devoted to case presentations, with Dr. Forbus acting as referee. The preliminary organization of the new pathologic group was effected during the annual meeting of the Medical Association of the State of Alabama in Birmingham in April. Its objective is to increase service to the people of Alabama by correlating the pathologic interests of those who engage in this work. Officers include Dr. Walter C. Jones, Birmingham, president; Irvin M. Wise, Mobile, vice president, and Joseph A. Cunningham, Birmingham, secretary-treasurer. The association plans to hold two meetings a year, one in connection with the meeting of the state medical association and the second a scientific session such as the meeting of September 21.

CALIFORNIA

New Chief of Communicable Disease Bureau.—Dr. Raymond Kaiser, San Francisco, consulting epidemiologist for the states in district number 5, U. S. Public Health Service, with headquarters in San Francisco, has been appointed chief of the bureau of acute communicable diseases, California Department of Public Health, effective August 12.

Actions on Foreign Graduates and Revoked Licenses.—According to Dr. Frederick N. Scatena, Sacramento, secretary-treasurer, California State Board of Medical Examiners, the board, in its consideration of graduates of foreign medical schools, believes that it has become impracticable, if not impossible, to investigate or secure detailed reports of the type and quality of instruction given in such schools. Accordingly the board at the August meeting passed the following rule:

> Applicants, including those applying for reciprocity on a license from another state, a certificate issued by the National Board of Medical Examiners or a commission as a medical officer in the United States Army, Navy or Public Health Service on graduation from foreign schools, whose resident professional instruction has been secured in teaching institutions located outside the United States and Canada and whose credentials are found sufficient in form by the credentials committee and the board, and the information available is found insufficient to determine adequately the sufficiency and quality of the applicant's resident professional instruction, shall be given and shall successfully take a written, oral and clinical examination suitable and sufficient to indicate the quality and sufficiency of his resident professional instruction.

This rule has the effect of eliminating direct reciprocity for graduates of foreign medical schools, as it provides that applicants whose credentials are acceptable will have to take a written, oral and clinical examination, regardless of whether they hold a license obtained by written examination in another state dated less than ten years prior to the filing of the application in the board office. The California State Board of Medical Examiners at a recent meeting extended the scope of investigation regarding applicants for restoration of revoked certificates or modification or termination of probation. These applicants, in addition to filing the information required in section 2375.5 of the Business and Professions Code, will be required to show complete rehabilitation and to what extent they have kept themselves abreast of the current advances in medicine and surgery.

COLORADO

Research Activity.—Fred E. D'Amour, Ph.D., professor of zoology at the University of Denver, has been appointed director of the university's newly established bureau of physical and biologic research and chairman of the department of zoology. Dr. D'Amour will be in charge of all research in the physical and biologic sciences at the university.

Society Condemns Political Activity of Health Service.—The Colorado State Medical Society on September 14 adopted unanimously a resolution condemning, without qualification, as a perversion of function and dereliction of duty, political and partisan activities on the part of officers of the U. S. Public Health Service, including its Surgeon General, and recommending that steps be taken to prohibit political activity on the part of the public health service and that "further steps be taken to restore the prestige of this important department of our government in the scientific field for which it was created, organized and financed, and in which it is sadly deficient at this time." The action was taken during the annual meeting of the state medical society at which Dr. John S. Bouslog, Denver, was named president-elect and Dr. Lawrence T. Brown, Denver, vice president. Dr. William A. Campbell Jr., Colorado Springs, was appointed treasurer by the board of trustees to fill one year of an unexpired three year term caused by the resignation of Dr. Lloyd R. Allen, effective Dec. 15, 1945. The time and place of the 1947 meeting will be decided later by the board of trustees.

CONNECTICUT

Wild Fox Dies of Rabies.—Rabies was found positive in a gray fox that appeared in the town of Morris. The animal was shot and the state bureau of laboratories reported examination of the head proved positive for rabies. Connecticut has been free of human rabies since 1932 and free of the disease among domestic animals since January 1943.

The Annual Clinical Congress.—A total of 715 physicians attended the annual clinical congress of the Connecticut State Medical Society and the Yale University School of Medicine, New Haven, September 10-12. Of this number 351 had filed advance registration for all sessions, the remainder attending the sessions from day to day. For the first time the congress maintained press rooms at Strathcona Hall and the New Haven Hospital. Among the many speakers was Dr. Howard W. Florey, London, England.

DISTRICT OF COLUMBIA

Appointments to George Washington University.—Dr. Thomas McPherson Brown, formerly assistant professor of medicine, Johns Hopkins University School of Medicine, Baltimore, has been appointed adjunct clinical professor of medicine at the George Washington University School of Medicine. During the war he served forty-two months in the Pacific theater as a consultant in infectious and tropical diseases and later was a special consultant to the Surgeon General, Washington. Other appointments to the school faculty include Dr. William T. Gibb Jr., formerly of New York, assistant clinical professor of medicine; Drs. George P. Robb, formerly of New York, and Monroe J. Romansky, formerly of Rochester, N. Y., associate clinical professors of medicine.

DELAWARE

Society News.—The New Castle County Medical Society was addressed September 17 by Dr. Harris B. Shumacker Jr., New Haven, Conn., on "Surgery of Peripheral Vascular Disease."

ILLINOIS

Personal.—Dr. Richard J. Graff, Lincoln, was recently appointed superintendent of the Peoria State Hospital.——Max H. Fisch, chief of the medical history division, Cleveland branch of the Army Medical Library, has been appointed professor of philosophy at the University of Illinois, Urbana.

Chicago

Branch Meeting.—The North Side Branch of the Chicago Medical Society will hold its first scientific meeting of the season at the Drake Hotel, October 3. The principal address will be delivered by Dr. Richard B. Cattell, Boston, on "The Management of Ulcerative Colitis."

KENTUCKY

Changes in Health Personnel.—Dr. Richard B. Fulks, Barbourville, has resigned as health officer for Knox, Laurel and Whitley counties to become field director in the division of county health work of the Kentucky State Department of Health, with offices in Louisville.——Dr. William F. Lamb, Russelville, has been appointed deputy director of health of Louisville and Jefferson County, succeeding Dr. Gradie R. Rowntree, who is on a year's leave of absence (THE JOURNAL, July 27, p. 1083). Dr. Lamb will carry this work in addition to his activities as venereal disease control officer in the department.——Dr. Edwin B. Underwood has resigned as health officer of Union County, effective September 1.

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MARYLAND

Meeting of Medical and Chirurgical Faculty.—The semiannual meeting of the Medical and Chirurgical Faculty of Maryland will be held at the Manor Club, Norbeck, October 10. Dr. Emil G. Bauersfeld, Bethesda, president of the Montgomery County Medical Society, will give the address of welcome, and Dr. Thomas R. Chambers, Baltimore, president, Medical and Chirurgical Faculty, the response. Other speakers will be:

Dr. Mark P. Schultz, Bethesda, Rheumatic Fever.
Commander C. H. C. Smith (MC), Bethesda, The Use of Penicillin Aerosol in the Treatment of Bronchiectasis.
Dr. Charles S. White, Washington, D. C., The Use of Amino Acids in Surgery.

MASSACHUSETTS

Postgraduate Assembly.—The fifth annual session of the New England Postgraduate Assembly will be held at the Hotel Bradford, Boston, October 30-31, under the auspices of the state medical societies of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut. The guest speakers will be:

Dr. James Bordley, Baltimore.
Dr. Donald M. Clark, Peterborough, N. H.
Dr. Edward J. Donovan, New York.
Dr. Nicholson J. Eastman, Baltimore.
Dr. Frank Glenn, New York.
Dr. Harry Gold, New York.
Major Gen. Paul R. Hawley, Washington, D. C.
Dr. Joseph M. Hayman Jr., Cleveland.
Dr. Yale Kneeland Jr., New York.
Dr. Alfred T. Lieberman, Baltimore.
Dr. Joseph E. Moore, Baltimore.
Dr. John R. Paul, New Haven.
Dr. Eugene P. Pendergrass, Philadelphia.
Dr. Lewis C. Scheffy, Philadelphia.
Dr. Wilfred P. Warner, Ottawa, Ont., Canada.
Sir Lionel E. H. Whitby, regius professor of physic, Cambridge, England.
Dr. Irvin S. Wright, New York.

MISSOURI

Health Forum.—The Jackson County Health Forum opened its 1946 lecture series with an address in the Municipal Auditorium September 25 by Dr. Walter C. Alvarez, Rochester, Minn., on "What Causes Headaches." On October 23 "The Latest in Medicine" will be the theme of a symposium presented by Drs. Grover C. Penberthy, Detroit; Ernest E. Irons, Chicago, and Guy A. Caldwell, New Orleans. Other speakers in the series will be:

Dr. William P. Holbrook, Tuscon, Ariz., November 27, Rheumatic Fever.
Dr. Manfred Sakel, New York, January 22, Nervous Exhaustion and Fatigue.
Dr. Dudley J. Morton, New York, February 26, How to Care for Your Feet.
Dr. Herbert Rattner, Chicago, March 26, Skin Diseases and Safe Cosmetics.
Dr. Morris Fishbein, Chicago, April 23, Cancer.

NEBRASKA

First Lecture for Poynter Foundation.—On September 20 the C. W. M. Poynter Foundation inaugurated its first lectureship with talks by Dr. Joseph S. D'Antoni, associate professor of tropical medicine, Tulane University of Louisiana School of Medicine, New Orleans, on "Clinical Parasitology" and "Public Health Aspects of Parasitology." Reuben G. Gustavson, Ph.D., chancellor of the University of Nebraska, also spoke on "The Place of the Medical School in the Middle West." The Poynter foundation was created in 1944 by alumni and friends of Dr. Charles W. M. Poynter to sponsor a lectureship and fellowship at the college of medicine (THE JOURNAL, Sept. 30, 1944, p. 378). The first fellowship was initiated in 1945 when Philip D. McIntosh, B.S., was selected as the first C. W. M. Poynter Foundation Fellow in medical science (THE JOURNAL, Aug. 18, 1945, p. 1180). Dr. Poynter, for whom the foundation was named, retired as dean of the medical school July 1, having held the position since 1928.

NEVADA

State Medical Meeting.—The annual meeting of the Nevada State Medical Association will be held in Las Vegas, October 4-5, nuder the presidency of Dr. John R. McDaniel Jr., Las Vegas. Among the speakers on the program will be:

Dr. Roland W. Stahr, Reno, Rheumatic Fever in Children.
Dr. Ernest W. Mack, Reno, Herniated Lumbar Intervertebral Disks.
Dr. Kenneth F. Smith, Las Vegas, Surgical Treatment of Hypertension.
Dr. Lowell S. Goin, Los Angeles, Contact Radiation Therapy for Cancer of the Bladder.
Dr. Clyde K. Emery, Los Angeles, Treatment of Cancer.
Dr. Hugh T. Jones, Los Angeles, Instructive Cases in Orthopedic Surgery.
Dr. Harvey E. Billig Jr., Los Angeles, The Role of Fibrous Tissue in Physical Disability.

Dr. Goin will address a banquet session on "The Public Health and the Nation."

NEW YORK

Psychiatric Forum.—The Brooklyn State Hospital is sponsoring a series of monthly psychiatric forums to which the community, both professional and interested members of the general public, are invited. The leading educators in psychiatry, neurology and allied specialties will speak on the latest advancements in their respective fields. The first meeting will be held on Thursday, October 3, in the auditorium at Brooklyn State Hospital. Dr. Nolan D. C. Lewis will speak on "Graphic Art Productions by the Mentally Disordered and Its Therapeutic Uses."

Personal.—Dr. Anthony J. Manzella, Buffalo, has been appointed deputy commissioner of health and full time director of the division of communicable diseases of the Buffalo Department of Health, effective July 1.——Dr. Leslie A. Osborn, Buffalo, has been appointed acting head of the department of psychiatry at the University of Buffalo School of Medicine.——Drs. John J. Masterson and William A. Jewett, both of Brooklyn, have been appointed alumni representatives on the board of trustees of the Long Island College of Medicine, Brooklyn.——Dr. Richard L. Frank has been appointed assistant clinical professor of psychiatry in the department of neurology and psychiatry, William Alanson White Clinic of the Long Island College of Medicine, Brooklyn.

New York City

The Janeway Lecture.—The Edward Gamaliel Janeway Lecture will be delivered in the Blumenthal Auditorium, Mount Sinai Hospital of New York, October 2, by Dr. Cornelius P. Rhoads. The title of the lecture will be "The Therapeutic Applications of Substances Investigated in Connection with Chemical Warfare."

David Levy Chosen Salmon Lecturer.—Dr. David M. Levy, director of the information control division Screening Center, with the U. S. Army in Germany, has been chosen as the Salmon lecturer for 1946 by the Salmon Committee on Psychiatry and Mental Hygiene of the New York Academy of Medicine. Entitled "Excursions in the New Fields of Psychiatry," his lectures will be given on the three successive Wednesday evenings of November 6, 13 and 20 at the New York Academy of Medicine Building, 2 East 103d Street.

PENNSYLVANIA

State Medical Meeting.—The ninety-sixth session of the Medical Society of the State of Pennsylvania will be held at the Bellevue-Stratford Hotel, Philadelphia, October 7-10, under the presidency of Dr. William L. Estes Jr., Bethlehem. Among the out of state speakers will be:

Dr. Vlado A. Getting, Boston, Modern State Health Laws.
Dr. Franklin G. Ebaugh, Denver, Present Day Concepts of the Psychoneuroses.
Dr. Chester S. Keefer, Boston, Use of Antibiotic Agents in Infectious Diseases.
Dr. Paul Reznikoff, New York, Hematologic Reactions to Some Modern Drugs.
Drs. Tom D. Spies, Birmingham, Ala., and Cincinnati, and Carl F. Vilter, Cincinnati, Detection and Treatment of Vitamin Deficiencies.
Dr. Arthur C. DeGraff, New York, Treatment of Chronic Congestive Heart Failure, with Special Reference to the Use of Cardiac Glycosides.
Dr. Priscilla White, Boston, Management of Diabetes Mellitus in Pregnancy.
Dr. Stuart W. Harrington, Rochester, Minn., Various Types of Diaphragmatic Hernia Treated Surgically, with Report of 430 Cases.
Dr. Thomas E. Jones, Cleveland, Repair of Injuries of the Common Bile Duct Following Cholecystectomy.
Dr. Richard B. Catteil, Boston, Carcinoma of the Rectum.
Dr. Julius Lempert, New York, Present Status of the Lempert Fenestra Non-Ovalis Operation for Restoration of Practical Serviceable Hearing in Clinical Otosclerosis.
Dr. Arthur J. Bedell, Albany, N. Y., Anomalies of the Fundus.
Dr. Robert H. High, Bethesda, Md., Nontuberculous Pulmonary Calcification in Histoplasmin Reactors.
Dr. Benjamin M. Spock, New York, The Middle Aged Child.
Dr. Charles A. Janeway, Boston, The Use of Blood Derivatives in the Treatment of Disease in Childhood.
Dr. Samuel M. Peck, New York, Suggested Methods for the Control of the Present Epidemic of Tinea of the Scalp.
Dr. Austin I. Dodson, Richmond, Va., The Surgical Treatment of Hydronephrosis.
Dr. Gustavus A. Humphreys, New York, Recent Problems in the Evaluation of Male Fertility.
Dr. Norman F. Miller, Ann Arbor, Mich., The Abuse of Pelvic Surgery in the Female.
Dr. Howard C. Taylor Jr., New York, Recent Trends in the Treatment of Cancer of the Cervix.
Alexander O. Gettler, Ph.D., New York, The Toxicologist as a Crime Detector.
Edith H. Quimby, Sc.D., New York, Atomic Energy and Medicine.

Features of the meeting include a luncheon for medical alumni of Northwestern University Medical School.

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TEXAS

Proposed Academy of Medicine.—Allied professional groups are cooperating in a movement in Dallas to construct a building to house various executive offices of different professional societies and associations, large and small auditoriums, museums and visual medical and health facilities. The building will be known as the Dallas Academy of Medicine and to project the movement a society has been formed with a similar name, of which Dr. Oscar B. Marchman Sr. is president. Other officers include Dr. Henry L. Rice, president of the Dallas County Dental Society, vice president, and Ray Spears, first president of the Dallas chapter of the Medical Service Society, secretary. Trustees of the academy are Drs. Marchman, Rice, Milford O. Rouse and Gilbert E. Brereton, Dallas, immediate past president of the Dallas County Medical Society, Dr. Everett C. Fox, Dallas, president of the Dallas County Medical Society, David W. Carter Jr., Jack G. Kerr, Edward T. Gillean, D.D.S., Thomas A. Lipscomb, D.D.S., Mr. Spears, who represents Sharp and Dohme, Inc., W. Brock Wright of the Upjohn Company, Dell Mason of Abbott Laboratories, Rae E. Skillern, president of Skillern and Sons Drug Stores, E. C. Harrell, Gaston Avenue Pharmacy, and Walter Cousins Jr., editor of the *Southern Pharmaceutical Journal*. The project stemmed from the local success of the Professional Detail Society of Dallas which, after carrying on many worth while activities for the medical and allied professional groups, changed its name to the Medical Service Society of America, the name now copyrighted through a national charter. The Dallas chapter became the charter chapter, and other chapters of the national group are located in Texas and Oklahoma cities. One of the principal movements of the Dallas chapter was to direct a cooperative program to raise a substantial fund for a medical library. Cooperating groups were the Dallas County medical,

Proposed building of Dallas Academy of Medicine.

dental and pharmaceutical associations, Graduate Nurses Association of Texas, the Dallas Hospital Council and the Medical Service Society of Dallas. The proposed academy of medicine is an objective of the cooperative efforts of these groups. The Tyler chapter has built a Post-Polio-Treatment Hospital, and the Fort Worth chapter is working in conjunction with the Tarrant County Medical Society to build a hospital for crippled children.

GENERAL

Kenneth Landauer Named to New Post.—Dr. Kenneth S. Landauer, director of the New York State Reconstruction Home at West Haverstraw, has been appointed director of the division of medical care of the National Foundation for Infantile Paralysis. He will coordinate the organization's year round program of medical care and treatment of infantile paralysis victims under supervision of Dr. Hart E. Van Riper, Washington, D. C., medical director.

Association on Mental Deficiency.—The seventieth meeting of the American Association on Mental Deficiency will be held at the Hotel Mount Royal, Montreal, Canada, October 2-5. The program has been divided into the following sections: general; medicine; psychology; education—teacher training; education—selection and classification; sociology; research; educational programs in residential schools; administration; educational organization and administration, and education—guidance, placement and follow-up. Luncheon sessions will be addressed by Dr. Donald E. Cameron, professor of psychiatry, McGill University Faculty of Medicine, Montreal, Canada, on "Research and Society" and by Dr. William E. Blatz, professor of child psychology, University of Toronto, Ontario, on "Security and Discipline in Democracy." A public meeting will be devoted to a discussion on "A Community Program for the Mentally Handicapped" at which the speakers will be Drs. Clarence M. Hincks, Toronto, director, National Committee for Mental Hygiene; Reginald P. Vivian, Port Hope, Ont., professor of health and social medicine, McGill University, and Father Noel Mailloux, professor of psychology, University of Montreal. Miss Mabel A. Matthews, Manchester, Conn., will deliver the presidential address Friday evening on "Need for Expansion of Social Work in the Field of Mental Deficiency."

Southern Psychiatric Association.—The annual meeting of the Southern Psychiatric Association will be held in Richmond, October 7, under the presidency of Dr. Whitman C. McConnell, St. Petersburg, Fla. Among the speakers will be:

Dr. Walter J. Otis, New Orleans, Our Postbellum Heritage.
Dr. Robert B. Suitt, Durham, N. C., The Psycholeptic Attack.
Dr. Harry C. Solomon, Boston, Leukotomies: Their Indications and Their Results.
Dr. Wladimir Liberson, Hartford, Conn., Psychiatric Applications of Electroencephalography.
Dr. James L. Anderson, Miami, Catatonia in Identical Twins.
Dr. David C. Wilson, Richmond, The Use of Magical Thinking and Ritual to Preserve Omnipotence as Demonstrated in Cases of Compulsion Neurosis.
Dr. Cuthbert H. Rogerson, Baltimore, The Use of Nitrous Oxide in Narcosynthesis.
Dr. C. Charles Burlingame, Hartford, Conn., Psychiatric Sense and Nonsense.
Dr. Nolan D. C. Lewis, New York, Some Suggestive Research Leads in Contemporary Neurochemistry.
Dr. Robert H. Felix, Washington, D. C., Mental Health—How a Program Can be Developed in the States.
Dr. Leslie B. Hohman, Durham, N. C., A Note on the Sex Disturbances in the Combat Fatigue Syndrome, with Especial Reference to Accompanying Abnormal and Forced Emotional Orgasm and Nocturnal Emissions.
Dr. Robert F. Gayle Jr., Richmond, The Plan for Resident Training in Neurology and Psychiatry for Veterans at the Medical College of Virginia.
Dr. Wendell S. Muncie, Baltimore, Private Practicing Psychiatry and Medical Teaching.
Dr. Harold F. Corson, Richmond, The Neuropsychiatric Program of the Veterans Administration.
Dr. William K. Keller, Louisville, War Neuroses.
Dr. Ernest H. Alderman, Richmond, Case Report on Acute Atrophy of the Liver with Psychosis.

Advisory Committee for Arthritis Foundation.—A National Medical and Scientific Advisory Council has been formed by the National Arthritis Research Foundation to direct all research and medical activities, it was announced September 16. The foundation was organized early this year to attack the problem of the causes, cure and prevention of arthritis and those rheumatic diseases directly related to it (THE JOURNAL, March 2, p. 592). A research center is to be built at Hot Springs National Park, Ark., national headquarters of the foundation, to house the principal laboratories and staff of the foundation. The formal opening of the foundation's campaign to raise $2,500,000 to promote its work will take place at a dinner at the Waldorf-Astoria Hotel, New York, October 7, under the chairmanship of Mr. Spyros P. Skouras, president of Twentieth-Century Fox Film Corporation. Included among the various specialties represented on the new advisory council are arthritis, bacteriology, general medicine, heart, metabolism, nutrition, orthopedics, pathology, physical medicine, physiology and virology. Members of the council include:

Dr. Guy A. Caldwell, New Orleans.
Dr. Paul R. Cannon, Chicago.
Dr. Albert E. Casey, Birmingham.
Dr. Edward L. Compere, Chicago.
Harry J. Deuel Jr., Ph.D., Los Angeles.
Dr. Herbert M. Evans, Berkeley, Calif.
Dr. Frank W. Hartman, Detroit.
Dr. Andrew C. Ivy, Chicago.
Dr. Howard T. Karsner, Cleveland.
Dr. Frank Krusen, Rochester, Minn.
Dr. James S. McLester, Birmingham.
Dr. Karl F. Meyer, San Francisco.
Dr. Josiah J. Moore, Chicago.
Dr. Franklin R. Nuzum, Santa Barbara, Calif.
Dr. Hobart A. Reimann, Philadelphia.
Dr. Howard A. Rusk, New York.
Dr. Willard H. Squires, New York.
Dr. William D. Stroud, Philadelphia.
Dr. Harry Winkler, Charlotte, N. C.
Dr. Charles W. Wainwright, Baltimore.
Dr. Gleason C. Lake, Boston.

International Medical Assembly.—The Interstate Postgraduate Medical Association of North America will hold its International Medical Assembly in the Public Auditorium, Cleveland, October 15-18, under the presidency of Dr. Donald C. Balfour, Rochester, Minn. Included on the program will be:

Dr. James S. Greene, New York, Treatment of the Disorders of Speech.
Dr. Charles W. Mayo, Rochester, Minn., Malignant Lesions of the Right Colon, with Particular Reference to One Stage Resection.
Dr. James J. Callahan, Chicago, Some of the Common Errors in Treatment of Fractures of the Extremities.
Dr. Eben J. Carey, Milwaukee, Progressive Muscular Dystrophy.
Morris Moore, Ph.D., St. Louis, Practical Points in the Diagnosis and Treatment of Actinomycosis and Sporotrichosis.
Dr. William F. Petersen, Chicago, Coronary Disease.
Dr. Frank L. Meleney, New York, Treatment of Surgical Infections by Chemical and by Antibiotic Agents.
Dr. Leonard T. Peterson, Washington, D. C., Ideal Stumps and Prosthetics for Amputees.
Dr. James D. Adamson, Winnipeg, Man., Canada, Residual Effects of Malnutrition in Prisoners from Japan.
Dr. Charles S. Higley, Madison, Wis., Recent Advances in the Control of Rheumatic Fever.

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Dr. Alfred W. Adson, Rochester, Minn., The Treatment of Brain Injuries.
Dr. Earl D. Osborne, Buffalo, Treatment of Acne.
Dr. Daniel C. Elkin, White Sulphur Springs, W. Va., The Operative Treatment of Aneurysms and Arteriovenous Fistulas.
Dr. Claude F. Dixon, Rochester, Minn., Diverticulitis.
Dr. George L. Fite, Carville, La., Leprosy, Its Detection and Management.
Dr. Drew W. Luten, St. Louis, The Clinical Course of Coronary Disease.
Dr. Arnold L. Gessell, New Haven, Conn., Developmental Diagnosis: Its Role in Clinical Medicine.
Dr. Edward Tolstoi, New York, The Treatment of Diabetic Acidosis and Diabetic Coma.
Dr. Conrad J. Baumgartner, Los Angeles, Surgery of Congenital Lesions of the Neck.
Dr. Rae T. LaVake, Minneapolis, Serology and Obstetrics.
Dr. Waltman Walters, Rochester, Minn., Developments in Surgery of the Upper Abdomen.
Dr. Robert A. Groff, Philadelphia, Diagnosis and Management of Peripheral Nerve Injuries.
Dr. William T. Green, Boston, Present Methods in the Treatment of Anterior Poliomyelitis.
Dr. Nelson W. Barker, Rochester, Minn., Anticoagulant Therapy in Thrombosis and Embolism.
Dr. Ross T. McIntire, Washington, D. C., Treatment of Deafness.
Dr. Isaac S. Tassman, Philadelphia, Ocular Changes in Relation to Internal Diseases.
Dr. Ralph K. Ghormley, Rochester, Minn., The Painful Shoulder.
Dr. Vincent W. Archer, Charlottesville, Va., Pitfalls in Spinal X-Ray Diagnosis.
Dr. Claude S. Beck, Cleveland, New Developments in Surgery of the Heart.

In addition, authorities in their specialties will conduct various diagnostic clinics. At the assembly dinner Thursday evening at the Carter Hotel, Dr. Balfour will present an "Outline of Medical History" and Col. Ashley W. Oughterson, medical and scientific director, American Cancer Society, New York, "Medical Effects of the Atomic Bomb on Japan."

Academy of Ophthalmology and Otolaryngology.—The American Academy of Ophthalmology and Otolaryngology will hold its 1946 session at the Palmer House, Chicago, October 13-18 under the presidency of Dr. Gordon B. New, Rochester, Minn. At a session Monday evening a portrait of the late Dr. Hal L. Foster will be presented. Dr. Foster was the founder of the academy at a meeting in Kansas City in April 1896. The portrait was unveiled at special ceremonies in Kansas City in 1945 as a memento of the fiftieth anniversary year of the national group. Dr. Foster died May 21, 1946. At the same session the guest of honor for the academy's 1946 meeting, Dr. George M. Coates, Philadelphia, will discuss "Two Problems—Care of the Deafened and Rhinoplastic Surgery." A symposium on radiation therapy will be presented by Drs. Curtis F. Burnam, Samuel J. Crowe and Charles E. Iliff Jr., all of Baltimore. Dr. Crowe's presentation is the Wherry Memorial Lecture. Special guests participating in the academy's program include:

Raymond Carhart, Ph.D., Evanston, Ill.
Mr. Howard Carter, Chicago.
Harold Westlake, Ph.D., Chicago.
Dr. L. von Sallmann, New York.
Dr. Robison D. Harley, Atlantic City, N. J.
Lieut. Col. Emory L. Shiflett, Cleveland.
Dr. Frederick W. Stocker, Durham, N. C.
Dr. Merrill B. Hayes, Chester, Pa.
Dr. Fremont C. Hall, Chester, Pa.
Dr. Horton C. Hinshaw, Rochester, Minn.
Dr. James B. Brown, St. Louis.
Dr. James T. Mills, Dallas, Texas.
Helenor Campbell Wilder, Washington, D. C.
Dr. C. L. Schepens, Brussels, Belgium.
Thomas H. Holmes, New York.
Helen Goodell, New York.
Dr. Stewart G. Wolf Jr., New York.
Dr. Harold G. Wolff, New York.
Dr. Benjamin Rones, Washington, D. C.
Dr. W. J. B. Riddell, Scotland.

The American Orthoptics Council and the American Association of Orthoptic Technicians will hold a joint session, and the Otosclerosis Study Group will present a program. Continuous courses will be conducted under the auspices of the section on instruction during the meeting. On Friday, October 18, the program of the section on otolaryngology will sponsor the first scientific section of the Pan American Congress on Otolaryngology and Broncho-Esophagology. Among the speakers will be:

Dr. Justo M. Alonso, Montevideo, Uruguay, Conservative Surgery of Cancer of the Larynx.
Dr. Jaime Del Sel, Buenos Aires, Argentina, Laryngeal Cancer and Lymphatic Metastasis.
Dr. John M. Robison, Houston, Texas, The Application of Local Pressure to the Mucosa of the Maxillary Sinus.
Dr. Eliseo V. Segura, Buenos Aires, Argentina, Surgery of Hypothysis and Treatment of Retrobulbar Neuritis.
Dr. Rea E. Ashley, San Francisco, Hyposensitization Therapy in Chronic Sinus Disease.
Dr. Roger A. Lanza Castelli, Cordoba, Argentina, Advantages in Not Tamponing After Submucous Resection: Personal Technic.
Dr. John B. Erich, Rochester, Minn., An Acrylic Obturator Employed in the Repair of an Obstructed Frontonasal Duct.

Prevalence of Poliomyelitis.—Reports of cases of poliomyelitis for the periods indicated have been received from the division of public health methods, U. S. Public Health Service, as follows:

Division and State	Sept. 14, 1946	Sept 15, 1945	Median, 1941-45	Total to Sept. 14, 1946	Total to Sept. 15, 1945
New England States:					
Maine	2	8	2	18	58
New Hampshire	11	1	1	101	20
Vermont	1	0	2	20	32
Massachusetts	33	45	28	139	256
Rhode Island	4	0	0	29	2
Connecticut	6	15	15	53	129
Middle Atlantic States:					
New York	87	148	109	732	1,270
New Jersey	16	87	41	159	683
Pennsylvania	19	93	63	162	404
East North Central States:					
Ohio	55	39	30	426	246
Indiana	29	8	8	219	128
Illinois	193	66	52	1,438	629
Michigan	74	16	29	529	101
Wisconsin	121	39	18	681	109
West North Central States:					
Minnesota	187	25	24	2,206	86
Iowa	42	46	13	359	134
Missouri	95	24	4	756	140
North Dakota	35	1	1	336	14
South Dakota	19	0	1	255	6
Nebraska	38	18	11	342	69
Kansas	64	8	9	575	72
South Atlantic States:					
Delaware	0	1	1	11	21
Maryland	5	8	8	63	71
District of Columbia	0	5	3	15	87
Virginia	7	19	11	79	202
West Virginia	7	3	1	54	45
North Carolina	8	4	4	81	96
South Carolina	0	5	3	18	152
Georgia	9	2	4	126	76
Florida	17	11	4	489	62
East South Central States:					
Kentucky	3	2	5	79	29
Tennessee	8	15	11	127	296
Alabama	10	3	3	388	118
Mississippi	14	3	3	241	42
West South Central States:					
Arkansas	19	5	5	270	37
Louisiana	21	6	2	282	62
Oklahoma	11	20	2	277	128
Texas	28	44	10	740	788
Mountain States:					
Montana	6	10	3	83	24
Idaho	3	2	1	20	9
Wyoming	10	1	0	99	10
Colorado	65	16	7	716	97
New Mexico	19	2	2	124	14
Arizona	5	1	1	86	11
Utah	7	22	3	75	166
Nevada	0	0	0	3	3
Pacific States:					
Washington	40	25	14	909	195
Oregon	17	1	6	103	29
California	135	46	25	1,390	409
Total	1,923	962		15,779*	8,009
Median, 1941-45			962		7,812

*Cumulative total changed by corrected reports

Marriages

RICHARD MCEWEN GERMAN JR., Franklin, Tenn., to Miss Marjorie Wolff of Plymouth, Wis., in New York, July 6.

WILLIAM M. DALY, Schenectady, N. Y., to Miss Minerva Jane Morris of Watertown in New York, July 1.

HARRY LAMBERT FILER JR., Hamden, Conn., to Miss Norma Cyrilla Schwan of Rochester, N. Y., July 6.

CURTIS CHARLES FULLER, Schenectady, N. Y., to Miss Virginia Wetmore of Earlville in June.

HERBERT LEONARD WARREN, Chickasha, Okla., to Miss Betty Byrl Clark at Anadarko, July 7.

GEORGE H. CECH, Berwyn, Ill., to Miss Florence C. Jones of Western Springs, Ill., May 4.

HARRIS S. POMEROY, Peabody, Mass., to Miss Ida I. Osborn of Lynnfield, June 30.

JAMES J. NORTON, Utica, N. Y., to Miss Marjorie Spencer of Syracuse in June.

DOMINIC A. PULEO to Miss Virginia Masiello, both of New York, July 14.

Deaths

Wells Phillips Eagleton ✦ Newark, N. J.; distinguished as a surgeon and as a leader in medical affairs, died September 11, aged 80, while on a vacation in Portsmouth, N. H. Dr. Eagleton was born in Brooklyn on Sept. 18, 1865. After graduating from the Polytechnic Institute at Brooklyn he received his M.D. degree from Columbia University College of Physicians and Surgeons in 1888. For two years he served an internship in City Hospital in Newark, after which he opened an office in Newark and became a member of the staff of the Newark Eye and Ear Infirmary, which he had founded and of which he was medical director, chief of staff and superintendent. He served also as chief of the division of head surgery in the Newark City Hospital and was consultant cranial surgeon at practically all of the leading hospitals in the area.

During World War I Dr. Eagleton was commissioned with the rank of major and became chief of brain surgery in the Camp Dix Base Hospital. He was the author of "Brain Abscess: Its Surgical Pathology and Operative Treatment," published in 1922, and later of other works on the "Cavernous Sinus" and on "Thromboses." He contributed extensively to medical periodical literature in his field. In 1939 he received the Edward J. Ill award from the Academy of Medicine of Northern New Jersey and during the next year the Award of Merit from the New Jersey State Medical Society. The honorary degree of doctor of science was conferred on him by the University of Newark in 1942 and by Rutgers University in 1943.

In association with his medical practice Dr. Eagleton participated effectively in the work of many medical organizations, holding the position of president of the American Otological Society in 1921, Medical Society of the State of New Jersey in 1923, New York Otological Society in 1929 and the American Academy of Ophthalmology and Otolaryngology in 1934. He was a fellow of the American College of Surgeons, of which he was a governor. In the American Medical Association he served as a member of the House of Delegates from 1924 to 1926 and from 1939 to 1944 inclusive.

Dr. Eagleton was distinguished not only in his medical career but also as a citizen of his community. He was president of the Newark Council of Social Agencies and a trustee of the Welfare Federation of Newark and of the Newark Museum. He was also a member of the New Jersey Commission for the Blind.

In 1944 Dr. and Mrs. Eagleton presented a brownstone building which adjoined the headquarters of the Academy of Medicine of Northern New Jersey to the Academy in order to provide space for a library and for meetings.

Up to the very end of his long and brilliant career in his chosen specialty he contributed to the literature. His most recent articles were a complete review of advances in the understanding of rhinologic and otologic conditions related to the nervous system, published in the *Archives of Otolaryngology* for February, May, June and July 1946. Dr. Eagleton was a man of strong convictions as to the trends and nature of medical practice, inclined usually to an intense individualism in his leadership.

Arthur Gilbert Barrett ✦ Baltimore; Baltimore University School of Medicine, 1896; College of Physicians and Surgeons, Baltimore, 1900; also a graduate in pharmacy; born in North East, Md., July 28, 1873; clinical professor of surgery at the Maryland Medical College from 1908 to 1912; fellow of the American College of Surgeons; for many years president of the Maryland Academy of Medical and Surgical Sciences; served during the Spanish-American War; surgeon for the draft boards during World War I; lieutenant commander in the medical corps of the U. S. Naval Reserve; wartime head of the Baltimore Council of the Navy League, resigning as state president and national director of the league this year; served as president of the Maryland Workshop for the Blind, which he helped to found many years ago; at various times on the staffs of the Baltimore City, Maryland General, Franklin Square, West Baltimore General and St. Agnes' hospitals; died in Atlantic City, N. J., August 21, aged 72, of biliary peritonitis.

Robert Von Der Heydt ✦ Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; born in Germany March 3, 1875; emeritus associate professor of ophthalmology at his alma mater, now known as the University of Illinois College of Medicine; formerly associate professor of ophthalmology at the Chicago College of Medicine and Surgery and associate clinical professor of ophthalmology at Rush Medical College; specialist certified by the American Board of Ophthalmology; member of the American Academy of Ophthalmology and Otolaryngology and the American Ophthalmological Society; past president of the Chicago Ophthalmological Society; served as ophthalmologist at the Illinois Eye and Ear Infirmary, Michael Reese Hospital and the Presbyterian Hospital in Chicago and the West Suburban Hospital in Oak Park, Ill., where he died September 18, aged 71, of coronary thrombosis.

John Daniel Thomas ✦ Washington, D. C.; University of Virginia Department of Medicine, Charlottesville, 1892; born in Northampton County, Va., Aug. 13, 1868; professor of physical medicine emeritus at the Georgetown University School of Medicine; life member and past president of the Medical Society of the District of Columbia; member of the American Clinical and Climatological Association; fellow of the American College of Physicians; served during the Spanish-American War and World War I; for many years on the staffs of the Georgetown University and Emergency hospitals; consulting physician, Tuberculosis Sanatorium, Washington Home for Incurables and Garfield Memorial Hospital; consultant in internal medicine, Diagnostic Center, Veterans Administration; died July 15, aged 77, of congestive heart failure.

Elmer Ellsworth Francis ✦ Memphis, Tenn.; Cincinnati College of Medicine and Surgery, 1884; University of Louisville (Ky.) Medical Department, 1885; fellow of the American College of Surgeons; for many years professor of anatomy and clinical surgery at the Memphis Hospital Medical College until it merged with the University of Tennessee College of Medicine, where he was emeritus professor of surgery; past president of the Memphis and Shelby County Medical Society; consulting surgeon, St. Joseph's, General and Baptist Memorial hospitals; died in the Methodist Hospital July 7, aged 82, of coronary heart disease.

Faith Lucena Meserve ✦ Weston, Mass.; Boston University School of Medicine, 1926; interned at the Boston Floating Hospital and the New England Hospital for Women and Children in Boston; served on the staffs of the Emerson Hospital in Concord, the Waltham (Mass.) Hospital and the Newton-Wellesley Hospital in Newton; assistant physician to the Weston schools and examining physician at Wellesley (Mass.) College, Radcliffe College in Cambridge and the Abbott Academy at Andover; died July 19, aged 51, of heart disease.

Reeve Leslie Ballinger, Kearny, N. J.; Jefferson Medical College of Philadelphia, 1913; also a graduate in pharmacy; member of the American Medical Association; past president of the Hudson County Medical Society; member of the staff and executive board of the American Legion Hospital in Newark; died July 18, aged 58.

Quintus Harper Barney ✦ Altavista, Va.; Medical College of Virginia, Richmond, 1916; member of the Lynchburg Academy of Medicine and the Southern Medical Association; member of the city council; served during World War I with McGuire Unit, Base Hospital number 45 at Toul, France; city health officer; on the staffs of the Lynchburg General, Virginia Baptist and the Marshall Lodge Memorial hospitals in Lynchburg; died suddenly July 16, aged 53, of coronary occlusion.

Carl Bishop ✦ Plainfield, N. J.; University of Virginia Department of Medicine, Charlottesville, 1921; specialist certified by the American Board of Otolaryngology; fellow of the American College of Surgeons; senior surgeon in the eye, ear, nose and throat department at the Muhlenberg Hospital; died in Riner, Va., July 27, aged 48, of diabetes mellitus.

Frederick Ernest Bolt ✦ Worcester, N. Y.; Albany Medical College, 1903; past president and for many years treasurer of the Otsego County Medical Society; past president of the board of education; served as county coroner and town health officer; died July 11, aged 70, of coronary occlusion.

Andrew Robeson Bond, Tampa, Fla.; Fort Worth School of Medicine, Medical Department of Fort Worth University, 1905; served in the medical corps of the U. S. Army during World War I; died July 3, aged 79, of cerebral hemorrhage.

Lester David Bowman, Jamestown, N. Y.; Long Island College Hospital, Brooklyn, 1893; member of the American Medical Association; chief examiner for the Selective Service Board; on the staffs of the Jamestown General Hospital and the Woman's Christian Association Hospital; died July 21, aged 75, of cerebral hemorrhage.

Walter H. Briggs, Ewing, Neb.; State University of Iowa College of Medicine, Iowa City, 1898; served on the board of health and as city physician; died July 10, aged 70, of arteriosclerosis.

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Albert J. Brinket, Detroit; Detroit College of Medicine, 1896; died July 2, aged 73, of carcinoma of the mouth and pharynx.

Elmer Henry Brock, Long Beach, Calif.; University of Nebraska College of Medicine, Omaha, 1938; served an internship and residency at the Milwaukee County Hospital in Wauwatosa, Wis.; served a residency at the City of Detroit Receiving Hospital and the Columbia Hospital in Milwaukee; specialist certified by the American Board of Radiology; served overseas during World War II; died July 16, aged 38, of pneumonia.

Harold Beckles Chandler, Boston; Harvard Medical School, Boston, 1911; member of the American Medical Association; served during World War I; formerly with the Massachusetts Charitable Eye and Ear Infirmary; died July 14, aged 60, of coronary thrombosis.

Fred Porter Claggett ✙ Newport, N. H.; Dartmouth Medical School, Hanover, N. H., 1897; medical referee for Sullivan County; on the staff of the Carrie F. Wright Hospital; died in Woodstock July 4, aged 77, in an automobile accident.

Philip E. Clark, Newport, R. I.; National Normal University College of Medicine, Lebanon, Ohio, 1896; for many years member of the board of health; died July 25, aged 79.

Homer E. Clarke ✙ Massies Mill, Va.; University of Maryland School of Medicine, Baltimore, 1901; died May 31, aged 67.

Earl Francis Conlin, Minersville, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1925; member of the American Medical Association; on the staffs of the Lemos B. Warne and Good Samaritan hospitals in Pottsville; died July 10, aged 46, of coronary thrombosis.

Douglas Beaman Darden, Stantonsburg, N. C.; University of Pennsylvania School of Medicine, Philadelphia, 1921; member of the American Medical Association; served during World War I; died in a hospital at Richmond, Va., July 17, aged 50.

Amos Dolbier Ellsworth ✙ Long Beach, Calif.; Hahnemann Medical College and Hospital of Philadelphia, 1900; at one time affiliated with the board of health of Fresno and health officer of Plainview, Texas; on the staffs of the Seaside and Community hospitals; died May 20, aged 70, of bronchopneumonia and arteriosclerosis.

Simon Greenfield ✙ New York; Eclectic Medical College, Cincinnati, 1925; on the staff of the Jewish Memorial Hospital, where he died July 8, aged 51, of intraventricular hemorrhage.

Nels Andrew Gunderson ✙ Minneapolis; University of Minnesota Medical School, Minneapolis, 1921; served on the staff of the Swedish Hospital, where he died July 17, aged 50, of cerebral hemorrhage.

Benjamin A. Harris, Mobeetie, Texas; Marion-Sims College of Medicine, St. Louis, 1892; died July 2, aged 84, of heart disease.

Sidney J. Hatfield ✙ Indianapolis; Hospital College of Medicine, Louisville, 1902; killed in an automobile accident at Laytonville, Calif., July 17, aged 66.

George Ambrose Henry, Tuscarawas, Ohio; Ohio Medical University, Columbus, 1897; member of the American Medical Association; died July 2, aged 78, of angina pectoris.

Henry Andrew Herkner, Independence, Ohio; University of Wooster Medical Department, Cleveland, 1906; member of the American Medical Association; president of the local board of education; served as chairman of the board of the Glenville Hospital and as staff member of the St. Alexis Hospital in Cleveland, where he died July 17, aged 67, of chronic leukemia.

Howard Roy Hess, St. Petersburg, Fla.; Medical College of Indiana, Indianapolis, 1904; member of the American Medical Association; past president of the Linn County (Iowa) Medical Society; served during World War I; formerly on the staff of St. Luke's Hospital in Cedar Rapids, Iowa; died July 10, aged 65, of primary carcinoma of the liver.

John Wesley Hoffman, Detroit; Michigan College of Medicine and Surgery, Detroit, 1901; also a graduate in pharmacy; served on the staffs of the Providence and Samaritan hospitals; died July 15, aged 78, of coronary thrombosis.

Emilian Otto Houda, Tacoma, Wash.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; died June 25, aged 67, of coronary occlusion.

Francis Elsworth Hypes, Nappanee, Ind.; Indiana University School of Medicine, Indianapolis, 1913; member of the American Medical Association; served during World War I; died July 13, aged 59, of cerebral hemorrhage.

James Joseph Jennie, Cincinnati; Miami Medical College, Cincinnati, 1907; member of the American Medical Association; a captain in the medical corps of the U. S. Army during World War I; on the staffs of the Deaconess, General and Children's hospitals; died July 4, aged 62.

Frederick Niles C. Jerauld ✙ Niagara Falls, N. Y.; New York University Medical College, New York, 1893; specialist certified by the American Board of Surgery; fellow of the American College of Surgeons; served during World War I; on the staffs of the Niagara Falls Memorial and St. Mary's hospitals; died July 27, aged 75.

Christian Arthur Schultz Kemper, Escondido, Calif.; Medico-Chirurgical College of Philadelphia, 1908; member of the American Medical Association; died in the Mercy Hospital, San Diego, July 13, aged 63, of coronary thrombosis.

William De Arcy Kinney, Osterville, Mass.; Medical School of Maine, Portland, 1899; member of the American Medical Association; for many years associate medical examiner in Barnstable County; on the staff of the Cape Cod Hospital, Hyannis; died July 12, aged 73, of carcinoma of the stomach.

Calvin Oscar Koch, Lima, Ohio; University of Cincinnati College of Medicine, 1939; interned at the Cincinnati General Hospital in Cincinnati, where he had served a residency in pediatrics at the Children's Hospital; at one time instructor in pediatrics at the University of Texas Medical Branch in Galveston; began active duty as a first lieutenant in the medical corps, Army of the United States, in June 1942 and when his service terminated in April 1946 held the rank of major; died July 19, aged 33.

Henry Louis Kreis ✙ Brooklyn; Long Island College Hospital, Brooklyn, 1907; for many years on the staff of the Lutheran Hospital, where he died July 21, aged 78, of carcinoma.

Albert Leining ✙ Weehawken, N. J.; Eclectic Medical College of the City of New York, 1906; Medico-Chirurgical College of Philadelphia, 1909; on the staffs of the Christ Hospital, Jersey City, and the North Hudson Hospital; died in Old Lyme, Conn., July 8, aged 64, of cardiac asthma.

Edward Conrad Lewis, Verona, Pa.; Bellevue Hospital Medical College, New York, 1881; member of the American Medical Association; died July 22, aged 86.

Tullius Blaine Lewis, Hammond, Ill.; Hering Medical College, Chicago, 1907; died in the Douglas County Jarman Hospital, Tuscola, July 9, aged 65, of heart disease.

Morris Liederman, Chicago; Chicago College of Medicine and Surgery, 1917; member of the American Medical Association; died in Cicero, Ill., July 25, aged 56.

Harold Ellsworth Lohlein, Reno, Nev.; St. Louis University School of Medicine, 1936; member of the American Medical Association; past district surgeon, Southern Pacific Railroad Company; died July 14, aged 43, of accidental poisoning.

Peter John McDermott, Kewanee, Ill.; State University of Iowa College of Medicine, Iowa City, 1904; member of the American Medical Association; for many years secretary of the Henry County Medical Society; affiliated with St. Francis Hospital; died July 12, aged 74, of cerebral hemorrhage.

Thomas D'Arcy McGregor ✙ Buffalo; McGill University Faculty of Medicine, Montreal, Que., Canada, 1918; associate in otolaryngology at the University of Buffalo School of Medicine; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; a captain in the Canadian army during World War I; on the staffs of the Buffalo General, Children's and Meyer Memorial hospitals; died July 14, aged 52, of coronary disease.

Edward Francis McIntosh, New Haven, Conn.; Yale University School of Medicine, New Haven, 1897; member of the American Medical Association; died in the St. Raphael's Hospital July 14, aged 86, of hypostatic pneumonia following injuries received in a fall down the stairs.

Joseph F. McKay, Buies Creek, N. C.; Medical College of the State of South Carolina, Charleston, 1884; member of the American Medical Association; died July 19, aged 85, of bronchopneumonia.

David Henry Mackie, Otego, N. Y.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1884; member of the American Medical Association; died July 13, aged 84, of cerebral hemorrhage.

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Nathan Adelbert Monroe, Syracuse, N. Y.; Syracuse University College of Medicine, 1889; member of the American Medical Association; served on the staff of the Onondaga General Hospital; died July 14, aged 83, of carcinoma of the liver.

William Rolla Nye ✠ St. Louis; St. Louis University School of Medicine, 1922; died in the Alexian Brothers' Hospital July 17, aged 61, of congestive heart disease.

Charles Clayton O'Byrne, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1894; formerly associate professor of pathology and adjunct professor of surgery at his alma mater; at one time professor of clinical surgery at the Jenner Medical College and professor of surgery at the Illinois Post-Graduate Medical School; served on the staff of St. Elizabeth's Hospital; died July 10, aged 77, of hemorrhage into the spinal cord.

James Francis O'Donnell ✠ Bethesda, Md.; Georgetown University School of Medicine, Washington, D. C., 1921; member of the Medical Society of the District of Columbia; served as associate professor of anatomy at his alma mater; a member of the Students' Army Training Corps during World War I; consulting physician for the Veterans Administration; died July 21, aged 48, of coronary disease.

John Robert Paddison, Kernersville, N. C.; University of Maryland School of Medicine, Baltimore, 1902; member of the American Medical Association; honorary member of the Forsyth County Medical Society, serving as its president in 1924; in 1926 president of the Eighth District Medical Society of North Carolina; surgeon for the Southern Railway Company; died July 20, aged 68, of heart disease.

Thomas S. Richardson, Waynesboro, Va.; University College of Medicine, Richmond, 1899; member of the American Medical Association; served on the town council; died in Marlinton, W. Va., July 6, aged 77, of cardiorenal disease.

Charles Ward Robinson, Carthage, Tenn.; (licensed in Tennessee in 1908); died in St. Thomas Hospital, Nashville, July 6, aged 64, of hypertensive cardiovascular disease.

Joseph Schenberg ✠ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1905; supervising physician of health education for the city board of education; member of the staff of the Lankenau Hospital; died July 20, aged 65.

Doyle Seward, Yazoo City, Miss.; Jefferson Medical College of Philadelphia, 1904; died in Boothbay, Maine, July 18, aged 63, of coronary thrombosis.

Calvin Gay Stevens, Harwinton, Conn.; Syracuse University College of Medicine, 1884; veteran of the Spanish American War; died in the Veterans Administration Facility, Newington, July 16, aged 84, of arteriosclerotic heart disease.

Ulysses S. Tarter, Cleveland; Meharry Medical College, Nashville, 1908; died in the Cleveland Clinic Hospital July 12, aged 65, of carcinomatosis.

William Herbert Taylor, Port Angeles, Wash.; Western University Faculty of Medicine, London, Ont., Canada, 1910; member of the American Medical Association; fellow of the American College of Surgeons; on the staff of the Port Angeles General Hospital; captain, medical reserve corps, U. S. Army, not on active duty; died in Rochester, Minn., June 4, aged 57, of cirrhosis of the liver with gastric varices.

Wallace H. Vosburgh, Denmark, Wis.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1896; member of the American Medical Association; died in Green Bay July 8, aged 77, of arteriosclerosis.

Barton C. Weesner, Morristown, Tenn.; University of Tennessee Medical Department, Nashville, 1894; member of the American Medical Association; past president of the Hamblen County Medical Society; on the staff of the Hamblen Hospital; died recently, aged 78, of coronary occlusion.

George Julius Williams, Atlanta, Ga.; Northwestern University Medical School, Chicago, 1941; served an internship and residency at St. Luke's Hospital in Cleveland; an officer in the medical corps, Army of the United States, during World War II; found dead in the Lawson Y. M. C. A., Chicago, July 1, aged 31, of chronic myocarditis.

George S. Williams, Lamar, Colo.; Chicago College of Medicine and Surgery, 1913; member of the American Medical Association; on the staff of the Prowers County General Hospital; died in Denver June 16, aged 62, of coronary heart disease.

DIED WHILE IN MILITARY SERVICE

Thomas Aloysius Broderick, San Francisco; Rush Medical College, Chicago, 1938; interned at the Presbyterian Hospital in Chicago; interned at St. Mary's Hospital, where he served a residency; major, medical corps, Army of the United States; died in the Letterman General Hospital June 8, aged 36, of coronary disease.

Charles Edward Crain, San Antonio, Texas; Baylor University College of Medicine, Dallas, 1937; born in San Antonio April 1, 1896; member of the American Medical Association; interned at St. Joseph's Hospital in Fort Worth; participated in the Mexican Border campaign as a member of the Texas National Guard cavalry and in World War I with the Trains and Military Police; appointed to the Selective Service Board during World War II and later a captain in the medical corps, Army of the United States, assigned to the staff of the Station Hospital at Fort Bliss, Texas; went overseas with the 279th Hospital Unit in the British Isles and after more than a year there he was returned to the United States because of illness; died at the Fitzsimons General Hospital, Denver, Dec. 15, 1945, aged 49, of carcinoma of the larynx.

George Jerome McHeffey, Butte, Mont.; University of Michigan Medical School, Ann Arbor, 1930; member of the National Gastroenterological Association; interned at the Murray Hospital; fellow in pathology at the Mayo Foundation in Rochester, Minn.; began active duty as a captain in the medical corps, Army of the United States, on Oct. 8, 1942; promoted to major and lieutenant colonel; served overseas for twenty-two months, including sixteen months in France as chief of the laboratory service of General Hospital number 203; died March 19, aged 41.

Stephen Roy Mills ✠ Medical Director, Captain, U. S. Navy, Washington, D. C.; born in Braddock, Pa., in 1887; University of Pittsburgh School of Medicine, 1910; joined the medical corps of the U. S. Navy as a lieutenant (jg) in November 1917; rose through the various grades to that of captain; served aboard the *California*, the cruisers *Trenton* and *Concord*, the mine tender *San Francisco* and the *Dobbin*, a destroyer tender; in 1938 reported to the Bureau of Medicine and Surgery, serving four years; in 1942 became commanding officer of the dispensary at the Naval Operating Base in Norfolk, Va.; returned to the Bureau of Medicine and Surgery as assistant personnel officer in 1945 after a two years tour of duty as commanding officer of the naval hospital at Newport, R. I.; died July 25, aged 58, of coronary thrombosis.

Benjamin Rubin, South River, N. J.; University of Edinburgh Faculty of Medicine, Scotland, 1931; member of the American Medical Association; interned at the Jersey City Hospital in Jersey City, Essex County Hospital for Contagious Diseases in Belleville and the Mount Sinai Hospital in New York; specialist certified by the American Board of Internal Medicine; began active duty as a major in the medical corps, Army of the United States, on Oct. 21, 1942 and on March 15, 1944 promoted to lieutenant colonel; served as chief of medicine at the 203d and 61st General Hospitals in England and the Birmingham General Hospital in Van Nuys, Calif.; died in the Walter Reed General Hospital, Washington, D. C., July 29, aged 42, of lymphosarcoma.

Donato Theodore Scenna ✠ Melrose, Mass.; Tufts College Medical School, Boston, 1930; diplomate of the National Board of Medical Examiners; interned at the Lawrence and Memorial Associated Hospitals in New London, Conn., and the Stamford Hospital in Stamford, Conn.; served as school physician and on the staff of the Melrose Hospital surgical staff; major, medical corps, Army of the United States; died March 3, aged 41, of coronary occlusion, while on terminal leave.

Jacob Philip Schultz, New York; New York University College of Medicine, New York, 1936; served a residency at the Beth Israel Hospital in Boston and an internship at the Lincoln Hospital; major, medical corps, Army of the United States; died in the Mount Sinai Hospital April 4, aged 33, of acute myoblastic leukemia.

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Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 24, 1946.

Teaching in Child Health

Teaching in child health is only beginning to develop. The Edinburgh Medical School has been the pioneer in this country. It has a professor in child life and health, Dr. Charles McNeil, who has described his work in the *Archives of Diseases in Childhood* (**20**:151 [Dec.] 1945) and more recently in a letter to the *Lancet* (**2**:143 [July 27] 1946). The Edinburgh plan, the fruit of twenty years' clinical experience of the newborn and of an associated child welfare clinic, is based on the fact that it is in the home that the issue of child health and disease is decided and on the conviction that the family doctor can do the work better than any other medical person. After some systematic lectures a class of students enters on the clinical course of child health, which consists of eighteen meetings: eight in the care of the newborn and in neonatal disease; ten in the problems of the older infant and child. All are given at the maternity hospital. There is a basal training concentrated on a uniform method of clinical assessment of health (physical and mental) in the successive ages of childhood, infant and child dietetics and instruction of the mother in the care and education of the child. The detection of minor ailments and their treatment is included but is only accessory to the main theme.

The total class of seventy is always subdivided. The basal technics are demonstrated in a small lecture room on selected typical cases to only half the class—thirty to thirty-five. Of the ten meetings devoted to the older infant and young child six are devoted to these basal demonstrations. Children of school age are included. The remaining four meetings are given in the sessions of the hospital child welfare clinic to groups of ten students gathered closely around mother, child and doctor. Thus the future family doctor gets in one place a clinical introduction to the whole range of health problems from birth throughout childhood, and his proficiency is tested at an examination. At the same time he receives his clinical training in children's diseases and obstetrics.

Professor McNeil claims that the advantages of this central health clinic for the training of the teacher and for study and research are equally great. Only in such a clinic can a complete training school be built up for all whose life work is the care of children—pediatricians, medical officers of the municipal health services, health visitors and midwives. Only at a maternity hospital, with the newborn providing the link with partum and antepartum pediatrics can we get the full range of the clinical material of health in pediatrics and a progressive continuity of study from both onward throughout childhood.

The Diphtheria Immunization Campaign

A national campaign for immunization of children against diphtheria was launched by the Ministry of Health toward the end of 1940. By the end of 1945 it was estimated that 58 per cent of the children under the age of 15 years in England and Wales were immunized, and the figures for notifications of cases as well as for deaths from the disease greatly diminished. The 1946 figures so far show a slight increase, for the first time since the campaign began. The 1945 figures were the lowest ever recorded and show that the cases are now about half and the deaths about a fourth of the prewar average. This decline is in striking contrast to the position in other European countries, where during the war there has been an alarming rise and diphtheria epidemics have been the worst for fifty years.

The campaign is directed toward immunizing all children up to the age of 15. The immediate target is 75 per cent of this total, which is regarded as the minimum necessary to maintain progress until diphtheria is eliminated as an epidemic disease. Before the nationwide campaign immunization was left largely to local authorities, of whom some did well, but in 1939 only 8 per cent of the child population had been immunized. This was raised to 58 per cent in 1945, when the total of children up to the age of 15 immunized reached nearly 6 million. The government provides local authorities with free prophylactic material and help in publicity campaigns. Other expenses are provided by the local authorities. National publicity includes press advertising, posters, films and broadcasts and is carried out in support of local publicity. The local authorities are urged to provide abundant facilities for immunization, and the campaign is helped by the persuasive efforts of doctors, health visitors, teachers and others in close contact with parents.

ITALY

(From Our Regular Correspondent)

NAPLES, Aug. 1, 1946.

National Medical Congress

A national medical congress will be held at Florence during the last week of September. The Sociedad Italiana di Medicina e Chirurgia, which will participate, decided to have modern concepts of malaria as one of the topics to be discussed. There is a tendency, especially among Italian malariologists, to state that there is an exoerythrocytic malarial parasitic cycle. Malarial parasites biologically belong to the hemosporidium subgroup. Hemosporidia in the host (men and birds) pass through schizogonic and a gametocytic cycle. Formerly it was believed that hemosporidia developed a schizogonic cycle in mesenchymal tissues, mainly in the bone marrow, spleen and liver, and that only the gametocytes in the blood were harbored within the erythrocytes, whereas plasmodia missed the mesenchymal cycle and developed an entire monogonic cycle in the erythrocytes. According to modern concepts both hemosporidia and plasmodia follow an early mesenchymal and a late erythrocytic cycle. Raffaele of Rome proved by experiments that the inoculation of plasmodia regardless of the dose either large or small of inoculated plasmodia is always followed by a "period of latency" during which plasmodia cannot be identified in the blood and later on by the appearance of plasmodia in the blood. The period of latency of malaria, which corresponds to the intramesenchymal cycle of plasmodia, is responsible for the failure of preventive quinine therapy when the drug is administered with interruptions even if large doses are administered. The period of latency is also the cause of late recurrences of malaria, even when actual malarial attacks do not appear for ten or twenty years. The mechanism of the recurrences is explained by the fact that the mesenchymal tissue of persons in fairly good health is strong enough to have plasmodia constantly captive. As soon as the physical resistance of the individual lowers, the strength of the mesenchymal tissue lowers sufficiently to permit escape of plasmodia into the blood, with its consequent malarial attack. The latter is an anaphylactic reaction to the mesenchymal malarial infection. Epinephrine acts as an antianaphylactic agent. Before knowledge of the anaphylactic significance of the malarial attack was acquired, Ascoli used to explain the effect of epinephrine on malarial patients as a favorable effect of the drug which contracted the spleen to eliminate the malarial parasites in the structure. These conceptions also explain congenital malaria, a case of which is to be discussed at the National Malarial Congress in September in Florence. An infant aged 15 days with congenital malaria was recently observed. His mother in her early youth lived in a malarial zone and had malaria

followed by cure. For a long time she has lived in a nonmalarial zone. She had occasional malarial attacks during pregnancy. The period of latency in the infant corresponded to the mesenchymal cycle of the parasite. Dr. Signorelli at a meeting of the Società Italiana di Biologia Sperimentale some time ago stated that the inoculation of material taken by sternal puncture from a malarial patient who has neither malarial attacks nor parasites in the blood produces malaria in normal persons.

Malaria in Ceylon

Dr. S. L. Hung, head of the Institute of Tropical Diseases in Hangchow, China, recently reported so many cases of malaria in Ceylon that the disease appeared to be in epidemic form. There are no Anopheles mosquitoes in Ceylon, but there are Culex and Aedes mosquitoes. The author published an important article on the subject. He shows photomicrographs of sexuated parasitic forms (oocites, oocinetes and sporozoites) which can be transmitted by mosquitoes other than Anopheles.

PARIS

(From Our Regular Correspondent)

Sept. 10, 1946.

Treatment of Hyperthyroidism with Aminothiazole

In a Paris letter published in THE JOURNAL Nov. 10, 1945 results of treatment with aminothiazole were reported. At the last meeting of the Société médicale des hôpitaux de Paris M. Perrault and other doctors reported their results in the treatment of 129 cases. They insist on the value in "chemical thyroidectomy" of this product, which is more easily handled than thiouracil. They have not observed cyanosis, albuminuria or agranulocytosis. On the other hand, they found that 5 per cent of the gastric upsets, nausea and vomiting can be presented or attenuated by the absorption, after meals, of pills rather than tablets, or by an association with the pellagra preventing vitamin; this technic has been proposed by Professor Justin Bezançon for sulfonamide therapy. There have also been drug fever, 7.7 per cent fever alone or accompanied with arthralgia, digestive troubles, erythema and ordinary skin reactions 5 to 7 per cent. In the febrile or cutaneous troubles the treatment is to be interrupted for only a few days and then can be resumed. The authors do not exceed the dose of 0.4 Gm. per day. Recent experiments by Perrault on the rabbit have confirmed the toxic reactions of antihyperthyroid products on the fetus. As a precaution against thyrotoxic syndromes or an excessive hypothyrosing reaction (which have practically never been observed with aminothiazole by the authors), thyroxine and estrogen should be administered. An operation is, nevertheless, unavoidable in cases of nodular goiter or toxic adenoma. Quite lately, Welti claimed that aminothiazole gave a stimulus to latent cancers of the thyroid, but this problem is still under study.

At a recent meeting of the Toulouse Société de médecine J. de Brux reported 8 cases of hyperthyroidism improved or cured with aminothiazole. The cardiac signs have rapidly ceased and diminution in the basal metabolism has been observed. Toleration to aminothiazole was highly praised by the author.

Seventh Centennial of Montpellier University

The seventh centennial of the Faculty of Medicine of Montpellier University has just been celebrated. Representatives of the government and several academic delegations were present. This school of medicine is the most ancient in France. Although its official status dates from 1220, it was famous before that time. Arab doctors, heirs of hippocratic medicine, taught here. The author of the famous "Livre de la médecine," who died in 1037, was a professor at Montpellier and Rabelais a professor of anatomy.

BUENOS AIRES

(From Our Regular Correspondent)

July 7, 1946.

Experimental Diabetes

Dr. B. A. Houssay recently reported to the Sociedad Argentina de Biologia the results of experiments carried on with the collaboration of Drs. V. G. Foglia and C. Dosne of Pasqualini. The injection of extract of the anterior part of the hypophysis in dogs with experimentally reduced size of the pancreas caused diabetes in 14 dogs after unilateral adrenalectomy, in 6 dogs after total adrenalectomy and maintained with desoxicorticosterone, and in 4 dogs after bilateral adrenalectomy and maintained only with sodium chloride. Several of these dogs had been previously deprived of the thyroids. Hypophysial diabetes can be experimentally produced in absence of the adrenals and the thyroids. The speaker reported also results of experiments carried on with the collaboration of Drs. R. F. Brignone and P. Mazzocco. An intravenous injection of alloxan produced a triphasic change of glycemia in hyperglycemia, hypoglycemia and hyperglycemia. Either permanent or transient diabetes appears in the last phase as the result of selective degeneration of the beta cells. The effect of alloxan depends on the concentration of the substance in the blood. The intravenous injection should be given rapidly. The effect of the substance is not modified by dextrose in early hyperglycemia, by the presence of either insulin or phlorhizin during the hypoglycemic phase or by previous subtotal pancreatectomy, thyroidectomy, thyroparathyroidectomy or adrenal demedullization. The acuteness of diabetes, as a rule, is moderate at the beginning and it progresses for some time. There are hyperglycemia, glycosuria, ketonuria, moderate polyuria and polyphagia. The animals can live for a long time after having passed a period of eight months of diabetes.

Public Health in Paraguay

Dr. Gerardo Buongermini, secretary of public health of the state, recently reported on the work of the Ministry of Public Health and Social Aid during 1944. There are several new hospitals and new buildings for the accommodation of centers of public health and public aid, whereas a few years ago only four state hospitals were functioning. The number of physicians giving social assistance to the public has increased in the last few years from twelve to one hundred and fifty. The actual organization of public health is based on sanitary units, each of which consists of a hospital, a maternity hospital and several sanitary posts. Each unit is in charge of a group of no less than nine physicians. There is a total of 132 units and several more are being organized. The Paraguayan Red Cross has recently established new hospitals or else has added new wings in hospitals which have been functioning for some years. There is a new pavilion for cancer. The Ministry of Health provided the Hospital de Clínicas of the Faculty of Medicine with a large supply of sanitary items. The crusades against leprosy, tuberculosis, syphilis and leishmaniasis have been intensified. A donation of $1,000,000 has been given by America to Paraguay for work on public health. Paraguay will contribute $500,000. Asylums for persons with leprosy and other antileprous centers will be constructed with this money within the next four years. A center for the temporary care of patients of either sex and of children is to be organized in Asunción. Santa Teresita Preventorium for the care of the normal children of leprous parents is one of the organizations the maintenance and functions of which form a part of the program actually carried on in Paraguay. The antituberculosis crusade is carried on by a group of phthisiologists. Control over the health of the public is maintained by means of the records in the individual register book of health. Treat-

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ment for syphilis is given to patients in all the sanitary units, sanitary posts, centers for the protection of mothers and their children and in those where milk is given to infants and children. There are special centers for the treatment of syphilis in workers, which function at hours convenient for workers. Drugs and medical care are given free of any charge. There are also centers for the treatment of leishmaniasis and ancylostomiasis in both rural and remote zones. Vaccination against smallpox and typhoid are compulsory. Vaccination against diphtheria, whooping cough and other diseases is also administered. An amount of $484,000 (1,450,000 guaranies) a year is appropriated in the budget for public health for the care of workers requiring treatment for industrial accidents and industrial diseases, common diseases, motherhood and invalidism and for the establishment of pensions for the elderly.

Brief Items

A few cases of acute malaria simulating yellow fever were recently observed in people living on the borders of Argentina and Paraguay. The disease was properly controlled by Argentine, Brazilian and Paraguayan health physicians.

Administration of the universities of Argentina was recently taken over by a decree of the government. Dr. Oscar Ivanissevich, regular professor of surgery of the Faculty of Medicine of Buenos Aires and head of the Surgical Clinic of the Faculty, and Dr. Orestes E. Adorni were appointed temporary administrators.

PALESTINE

(From Our Regular Correspondent)

JERUSALEM, Aug. 28, 1946.

Fifteenth Palestine Medical Congress

The fifteenth Palestine Medical Congress was held at Haifa from March 26 to March 28. About 300 physicians from all parts of the country attended. The president of the association, Dr. M. Shermann of Tel Aviv, opened the meeting. Two main themes were debated by the congress: diseases of the heart and peripheral artery and diseases of the lung (with the exception of tuberculosis). Concerning heart diseases S. G. Zondek of Tel Aviv read a paper on the development of cardiology during the last fifty years, particularly explaining the shift from anatomic to functional thinking. Ungar of Jerusalem discussed the pathology of coronary artery disease and the resulting myocardial lesions, Fleischmann of Afuleh coronary insufficiency and Bandmann of Petach Tikvah the clinical aspect of myocardial infarction. Bandmann reviewed comprehensively about 200 cases from the Beilinson Hospital of the Workers Sick Fund Kupath Cholim. The discussions gave many other clinicians the opportunity of expressing their views on this important problem.

There were further papers on paroxysmal tachycardia by R. Fisher of Haifa and on changes in the electrocardiogram not due to organic diseases by Rachmilewitz of Jerusalem and by Brandstaetter of Tel Aviv and finally by Btesh of Tel Aviv, who spoke on treatment of subacute bacterial endocarditis with penicillin.

In the second part of the main theme (peripheral artery diseases) papers were read on the methods of their examination by Domb of Tel Aviv and their surgical treatment by E. G. Joseph of Jerusalem.

On the second theme, diseases of the lung, papers were read on bronchiectasis by Schieber (pathogenesis, diagnosis and conservative treatment) and by Salinger and C. Friedmann of Petach Tikvah (x-ray tactics). Lieutenant Colonel Quist of the Royal Army Medical Corps read a paper on carcinoma of the lung and K. Friedmann of Petach Tikvah on the surgical treatment of purulent chronic diseases of the lung, the one from experiences of the army, the other from the Beilinson Hospital.

The Lytic Action of Normal Feces on Endameba Histolytica

From the Department of Parasitology of the Hebrew University came the interesting information by S. Adler and N. Foner that the normal feces is able to destroy Ameba histolytica when artificially added. This observation was first made in 1940, when the Department of Parasitology made regular demonstrations for medical officers on amebiasis. The aim of these demonstrations was to show the development of the normal Endameba histolytica cycle. Occasionally there was no patient in the Hadassah Hospital suffering from amebiasis and therefore amebas from a culture were taken and mixed with the feces of a healthy person. About half an hour after the inoculation of the amebas into the normal feces was performed it was difficult to find any active form of the amebas.

This phenomenon was investigated and could be proved as correct in each of the examinations performed; i. e., after a short time Ameba histolytica mixed with the feces of a healthy person are no more demonstrable. To illustrate these findings by some figures: A culture of Endameba histolytica containing 400 active amebas per unit volume was mixed with 0.5 Gm. of feces. After two minutes only 40 amebas per unit volume and after one hour only 8 amebas per unit volume could be found. It should be stated that the feces of persons suffering from acute amebic dysentery do not show this effect, which means that amebas which have been mixed with feces taken from patients suffering from acute amebic dysentery are not destroyed through this experiment. Occasionally, in the last mentioned experiments, cysts of amebas with chromatoid bodies have been found. About 80 per cent of the amebas artificially added to the feces of a healthy person are destroyed in some minutes and no trace could be found after their destruction.

Death of Professor Sophia Getzowa

Dr. Sophia Getzowa, professor emeritus of the Hebrew University and former pathologist of the Hadassah University Hospital in Jerusalem, died on July 12 at the age of 74. Born in Russia, Professor Getzowa received her medical degree from the University in Bern, Switzerland. She specialized in pathology under Langhans and Hedinger and became a privatdocent at the University in Bern in 1912, later also teaching in Basel. Her earliest papers dealing with the pathology of the thyroid and parathyroid glands are still remembered and quoted by students of the subject. From 1925 until her retirement in 1939 Dr. Getzowa was pathologist of the Rothschild Hospital of the Hadassah Medical Organization in Jerusalem. During that period she laid the foundation for her special field in Palestine. For many years she worked almost single handed, performing necropsies all over Palestine and doing surgical-pathologic examinations for all hospitals in this country, Jewish and others. During these years Dr. Getzowa founded the Pathological Museum of the Hadassah University Hospital, which, from the beginning, was arranged for didactic purposes as far as mounting and labeling with addition of case histories was concerned. By her convincing and yet humble approach to the problem of necropsies Getzowa succeeded in overcoming many sentimental and to a considerable degree also religious prejudices. It is in a large degree due to her pioneering effort that Palestine can boast now four departments of pathology (in Jerusalem, Tel Aviv, Petach Tikvah and Haifa) in which a high percentage of postmortem examinations are performed, sufficient to give valuable material not only for research but also for undergraduate training.

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Correspondence

PENICILLIN BY IONTOPHORESIS

To the Editor:—The subject of iontophoresis (ionization) of penicillin should be clarified, as there are references in the literature regarding the efficacy of this method of application (von Sallmann, Ludwig, and Meyer, Karl: Penetration of Penicillin into the Eye, *Arch. Ophth.* **31**:1 [Jan.] 1944. Dunnington, J. H., and von Sallmann, Ludwig: Penicillin Therapy in Ophthalmology, *ibid.* **32**:353-361 [Nov.] 1944. Abramowitch, D., and Neoussikine, B.: Treatment by Ion Transfer (Iontophoresis), New York, Grune and Stratton, 1946). Recently a report (Hamilton-Paterson, J. L.: The "Ionization" of Penicillin, *Brit. M. J.* **1**:680 [May 4] 1946) appeared in the British literature in which it was stated that penicillin could not be ionized. It was found that penicillin was either a very poor conductor or a nonconductor. There was no movement of penicillin during the passage of an electric current through a solution of its sodium salt. Further, it was reported that the presence of the products of electrolysis of sodium chloride in vitro led to the rapid destruction of penicillin.

This work confirmed my own observations in attempting to force penicillin across the normal skin by iontophoresis. One hundred thousand units of sodium penicillin was dissolved in 30 cc. of distilled water and applied in asbestos paper through the negative pole. The site chosen was the forearm. The subject was a normal young man. The current was gradually increased to a maximum of 20 milliamperes. The total time was fifteen minutes. Samples of venous blood draining the area were taken immediately after the fifteen minutes of application and fifteen minutes later. Only a trace of penicillin was found in the first sample and none in the second. This experiment was repeated at a later date except that this time the penicillin was applied through the positive pole. In the two samples of venous blood no trace of penicillin was found. Controls receiving penicillin by intramuscular injection showed appreciable activity each time. The broth dilution method with use of a sensitive hemolytic streptococcus was used in these assays.

As many men, especially oculists, are using penicillin by iontophoresis, it is felt that this additional information should be brought to their attention.

ROY J. POPKIN, M.D., Los Angeles.

EXPERIENCE WITH DEMEROL IN EUROPE

To the Editor:—The following observations may be of interest to you with regard to the controversy between Dr. C. K. Himmelsbach, Chicago, Mr. H. J. Anslinger, Washington, D. C., and Paul de Kruif, Ph.D., Holland, Mich. (THE JOURNAL, September 7).

In the spring of 1945 I acted as liaison officer between First Army Headquarters and a central "German Sanitary Staff" established temporarily to maintain the function of the large number of captured German medical installations. Repeated inspections of hospitals and numerous trips throughout the occupied area gave me an opportunity to become familiar with administrative and technical experiences and difficulties encountered by the German army.

A tragic accident led me to investigate the use of Demerol by the medical department of the German units then under our control. Allied troops which had opened a medical depot found a large stock of an alcoholic preparation of Dolantin (the German trade name for Demerol), mistook it for a beverage and drank numerous bottles; a large number of casualties resulted.

Consultation with German medical officers and pharmacists revealed that the staff had at this time 40 cases of known Demerol addiction in its files; that, furthermore, a large number of hospitals had abandoned its use for this reason. It is interesting to note that in Germany too it had been assumed for some time that Demerol was less addicting than morphine, a theory which had been revised by the spring of 1945.

Subsequently I was called repeatedly by military government officials to examine cases of Demerol addiction in civilians. I remember 1 instance which illustrates convincingly the danger of the drug. A physician addicted to morphine submitted twice to treatment. After the second treatment he was advised to try Demerol and developed within three months an addiction to the substitute. During this period he performed an abortion and was committed to a sanatorium for clinical study. After several weeks an attempt to withdraw the drug was made; he developed no symptoms of withdrawal. It was suspected, therefore, that he had managed to obtain considerable quantities of the drug. Careful isolation revealed not only that his wife in weekly visits had issued Demerol to him but that she herself—after having taken the drug once or twice as a sedative, following her husband's confinement—had become a Demerol addict.

Although the case histories on pages 43 and 44 of the September 7 issue of THE JOURNAL contain convincing evidence against Paul de Kruif's statement, it might be helpful to add these experiences to the warning.

MAX SAMTER, M.D., Chicago.

COST OF HOSPITAL OPERATION

To the Editor:—Pertinent indeed are the editorial comments and the remarks of the Council on Medical Education and Hospitals regarding the financial aspects of the location of a medical school (THE JOURNAL, August 17, pp. 1281 and 1357). Medical schools would be wise to seek as close cooperation as possible with existing clinical facilities. The necessity for careful guidance of clinical practices and standards in order to meet the ideals of modern medical education frequently requires regulation to which impatient physicians may often object. For this reason medical schools should have full control of affiliated teaching hospitals or establish their own teaching hospitals.

No matter where the medical school is located, it must receive adequate support if it is satisfactorily to fulfil its obligations in our society. Compromises to conserve funds inevitably result in compromises with ideals and standards.

It is becoming increasingly apparent that larger sums than ever are required for the successful development of a medical school and teaching hospital in accordance with modern standards of medical training. A heavy burden is to be expected as a result of the great expansion of postgraduate training for specialty certification under medical school auspices.

In the remarks by the Council on Medical Education and Hospitals it was emphasized that an appropriate teaching hospital for a modern medical school would cost about $10,000 per bed and that at least 400 beds are required. The number of beds indicated is certainly a minimum, and for small classes at that. It might be wiser to indicate that at least 5 beds per student in the clinical years is necessary for satisfactory clinical instruction, in addition to a well functioning outpatient clinic.

More important perhaps than the initial cost of new hospital construction for proper medical teaching is the proposition of adequate support for maintenance and operation. It is not generally recognized that it costs about one third as much per year to operate a modern teaching hospital as it does to build and equip it. If it takes $10,000 per bed to build and equip a suitable teaching hospital, it certainly will cost at least $3,500

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per bed annually to operate the institution in a satisfactory manner. Those who are interested in developing our medical schools or in establishing new ones should consider not only the cost of building and equipment but also the necessity of providing adequately for continuing funds for proper operation. With average hospital operating costs now rapidly approaching $10 per patient day and with rising costs of food, supplies and personnel, the problem of funds for the continuing and satisfactory operation of teaching hospitals will become increasingly acute.

B. I. BURNS, M.D.
Medical Director, John Sealy Hospital.

CHAUNCEY D. LEAKE, PH.D.
Vice President, University of Texas Medical Branch.
Galveston, Texas.

POSTURAL FACTORS IN APICAL TUBERCULOSIS

To the Editor:—In the editorial with this heading in THE JOURNAL, July 13, page 897, you discussed a newly developed theory of pathogenesis of apical tuberculosis according to which susceptibility to pulmonary tuberculosis is dependent on the pulmonary intravascular pressure.

This view was set forth by me in a paper read before the society of physicians in Vienna on July 3, 1920 (Röder, Ferdinand: Bemerkungen über die Disposition zur Lungentuberkulose, *Wien. klin. Wchnschr.* **33**:646 [July 15] 1920). It was developed at that time by combining facts from general biology, physiology, pathology and clinical medicine. Confirmation of this theory was found in the frequency of tuberculosis in pulmonic stenosis and in its rareness in mitral stenosis and kyphoscoliosis. I pointed out that in the last mentioned instance the protection is dependent mainly on the condition of the heart, that with the onset of myocardial degeneration pulmonary tuberculosis becomes more frequent. Furthermore, I attributed the beneficial effect of artificial pneumothorax to the consequent (proved) increase in the pulmonary pressure and to the increased function of the right chamber, which, if long enough continued, lead to hypertrophy of this part of the heart. In some cases in which only dilatation without hypertrophy had been found at autopsy, the history revealed that collapse therapy had failed to produce the usual effect. Finally, I stated that this theory provides an explanation for the predisposition of the apex since, in the erect position, the capillary pressure must, in accordance with hydrostatic laws, be lower in the higher parts of the lungs than in the lower parts. "The curative effect of prolonged bed rest and of high altitude appear herewith in a new light." And, lastly, the local differences in the immunity of individual neighboring cells were accounted for by the local differences in capillary pressure.

FERDINAND RÖDER, M.D., New York.

"ASPHYXIATE" OR "ANOXIATE"

To the Editor: Recently I had occasion to suggest the new word "anoxiate" as distinct from the term "asphyxiate." I trust you will agree with me that the term "asphyxiate" as it is often used is an unfortunate one. This I pointed out in some detail in a communication to the editor of *Science*. I am convinced that there is a real and justifiable need for the word "anoxiate." It is my earnest hope that the editors of scientific publications will promote its use and that it will be accepted and used by scientific men.

EDWARD J. VAN LIERE, M.D., Morgantown, W. Va.
Dean, West Virginia University School of Medicine.

Medical Motion Pictures

FILM REVIEW

Herbert Operation for Glaucoma. Color, silent, 2 reels, 25 minutes. Prepared in 1946 by Louis Lehrfeld, M.D., Wills Eye Hospital, Philadelphia. Procurable on loan from the author, 1321 Spruce Street, Philadelphia 7.

This film demonstrates the technic of the author's modification of the trap door operation for glaucoma, first proposed by Herbert in 1907 and 1910 but never widely adopted or recognized as a standard surgical procedure. In this demonstration the 5 to 8 mm. incision is placed farther back, about 8 mm. from the limbus and the "trap door" created by two cuts in the sclera perpendicular to the ends of the scleral incision (after preliminary dissection of a conjunctival flap and placing of sutures).

The placing of the operative site in the "nondanger" zone offers real advantage and may well be effective in reducing the intraocular pressure, especially when combined with cyclodialysis as advocated by the author in high tension glaucomas, but further evidence will be required to establish this as an acceptable method for the surgical control of glaucoma.

The operative technic is clearly shown in the film in several cases, with and without cyclodialysis. Having seen the film, any qualified ophthalmic surgeon should be able to perform the operation without difficulty. Because the procedure is still unestablished, it is recommended for showing only to ophthalmologists with experience in the management of glaucoma. The color photography is well done.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, Sept. 21, page 172.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Part II.* Dec. 16-17. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Various centers, Sept. 30. *Oral.* Boston, Oct. 9-14. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York 22.

AMERICAN BOARD OF DERMATOLOGY & SYPHILOLOGY: *Oral.* Cleveland, Dec. 5-7. Sec., Dr. George M. Lewis, 66 E. 66th St., New York 21.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Feb. 17. Final date for filing applications Nov. 1. Sec., Dr. William A. Werrell, 1 W. Main St., Madison, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* New Haven, Oct. 8-9. Sec., Dr. P. C. Bucy, 912 S. Wood St., Chicago 12.

AMERICAN BOARD OF OBSTETRICS & GYNECOLOGY: *Written. All Groups. Part I.* Various centers, Feb. 7. Final date for filing application is Nov. 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 6.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral. All Groups. Parts I and II.* New York, June 1947. Final date for filing application is Dec. 1. Chicago, October 1947. Final date for filing application is March 1. Sec., Dr. S. J. Beach, 56 Ivie Rd., Cape Cottage, Me.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Part II. Oral.* Chicago, January. Final date for filing application is Nov. 1. Sec., Dr. Guy A. Caldwell, 1136 W. Sixth St., Los Angeles 14.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Chicago, Oct. 8-12. Sec., Dr. D. M. Lierle, University Hospitals, Iowa City.

AMERICAN BOARD OF PSYCHIATRY & NEUROLOGY: New York, Dec. 16-17. Final date for filing application is Sept. 30. Sec., Dr. Walter Freeman, 1028 Connecticut Ave., N.W., Washington, D. C.

AMERICAN BOARD OF UROLOGY: *Oral.* Chicago, February 1947. Final date for filing application is Nov. 15. Sec., Dr. Gilbert J. Thomas, 1409 Willow St., Minneapolis 4.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Optometry Practice Acts: Right of Corporation to Practice Optometry by Employing Licensed Optometrists.—The Standard Optical Company commenced a certiorari proceeding to review a judgment finding the company, among other things, guilty of practicing optometry within the state and enjoining it from displaying certain signs, circulating described advertisements and employing a registered optometrist to examine and test eyes. The appeal was to the Supreme Court of Washington.

The plaintiff's store is under the control of a licensed optometrist who examines and tests the eyes of customers, determines whether glasses are needed and, in proper cases, on request prescribes and sells glasses. The plaintiff exercises no control over the professional judgment of the optometrist, who is selected by the plaintiff and compensated by an agreed salary plus a commission based on the gross receipts. The company makes one charge which covers both the examination and the glasses. The question presented is whether a corporation has the right to engage in the practice of optometry and, if not, whether the course of business followed by the plaintiff in maintaining a store under its own name, in charge of a licensed optometrist in its employ, coupled with the advertising of the services of this optometrist, constitute the practice of optometry by the plaintiff.

After reviewing the pertinent provisions of the Washington statutes relating to the practice of optometry, the Supreme Court said that it is apparent that a corporation cannot be licensed to practice optometry. The legislative intent to place optometry in the same general category as the professions of law, medicine and dentistry clearly appears. Beyond question, the practice of optometry affects the public health and welfare. In 13 Am. Jur., page 838, section 837, it says:

> It is generally held that, in the absence of express statutory authority, a corporation may not engage in the practice of optometry either directly or indirectly through the employment of duly registered optometrists.

And in 41 Am. Jur., page 149, section 20, appears the following:

> And it is the majority rule that a corporation cannot engage in the practice of medicine, and that neither a corporation nor any other unlicensed person or entity may engage, through licensed employees, in the practice of medicine or surgery, dentistry or any of the limited healing arts, although, as appears later, some of the courts qualify or disregard the rule in favor of the practice of optometry. A statute permitting corporations for profit to be organized for any lawful purpose does not authorize the organization of corporations to engage in the practice of medicine where a statute regulating such practice contemplates only the licensing of individuals.

The plaintiff argued that the mere employment of licensed agents does not constitute the practice of optometry. It is difficult to overestimate the importance of good sight, said the court. The use of lenses to improve vision is very great, and the prescribing of properly prepared glasses and the advice, in proper cases, that glasses are unnecessary, are equally important. Incalculable harm may result from improper diagnosis or advice in connection with these matters or from the use of glasses not correctly ground. Before one may be permitted to take the examination for an optometrist's license, the applicant must show that he has followed designated courses of study which indicate that he possesses certain educational qualifications. We are convinced, said the court, that the legislature correctly classed optometry as a profession and that under the statutes of this state it should be so considered. In a Supreme Court case decided in South Carolina which held that unlicensed persons employing licensed physicians to make eye examinations were unlawfully practicing optometry, the court said:

> If such a course were sanctioned the logical result would be that corporations and business partnerships might practice law, medicine, dentistry or any other profession by the simple expedient of employing licensed agents. And if this were permitted professional standards would be practically destroyed, and professions requiring special training would be commercialized, to the public detriment. The ethics of any profession is based upon personal or individual responsibility. One who practices a profession is responsible directly to his patient or his client. Hence he cannot properly act in the practice of his vocation as an agent of a corporation or business partnership whose interests in the very nature of the case are commercial in character.

This and other contentions of the plaintiff having been overruled, the judgment under review was accordingly affirmed.—*State ex rel. Standard Optical Co. v. Superior Court for Chelan County, 135 P. (2d) 839 (Wash., 1943).*

Hospitals: Liability of Parent for Services Rendered to Minor Child.—The plaintiff, as devisee of Joseph T. Buxton, who had operated the Elizabeth Buxton Hospital during his lifetime, filed an action to recover a bill for hospital services rendered to the defendant's minor son, also deceased. From a judgment dismissing his action, the plaintiff appealed to the Supreme Court of Appeals of Virginia.

The defendant's son was taken to the Buxton Hospital suffering from an attack of acute appendicitis. He was operated on and remained in the hospital for about a month before he died. At the time of his death, the deceased was not quite 21 years of age. He had been working since he was 17 and for about a year prior to his death he lived away from home and completely supported himself. The defendant had known nothing about his son's illness until after the operation and testified that if he had he would have taken him to a different hospital. The only payment made on the hospital bill was made by the son from his own hospital insurance fund. After the son's death the defendant was approached by the office manager of the plaintiff's hospital. She testified that she told defendant she did not wish to bother him about financial matters at that time, that she asked him for his address and told him that she would send him the bill, that he gave her his address and said "all right, do so" or "all right, send me the bill," that she made it clear to the defendant that she was expecting him to pay the bill and that he did not disclaim responsibility for the bill at that time.

The plaintiff based his action on the ground that the defendant, on the day he left the hospital, effectually promised to pay the bill and is therefore liable on an express contract, that during the period of his son's illness the defendant accepted and acquiesced in the attention, treatment and services received by his son at the hands of the petitioner and is therefore liable on an implied promise to pay the bill and that the defendant is liable for the hospital services rendered his son because of the relationship of parent and child, by virtue of which the law imposes on him the duty to care for and furnish necessities to his infant son, including hospital and medical services.

The evidence tending to support any contract obligation either express or implied on the part of the father to pay the account, said the court, is so slight that it amounts to no proof at all. Was the defendant, however, liable to the plaintiff by reason of the relationship of parent and child? The evidence disclosed, the court continued, that the son was over 20 years of age and had been supporting himself for about three years. He worked away from home, drew his own wages and spent them as he alone desired. Under these circumstances it is reasonably certain that the defendant could not have successfully proceeded against his son's employer for the son's wages. In discussing the doctrine of emancipation of a minor, Williston on Contracts (vol. 1, sec. 225, page 674) says: "Such emancipation may be by express agreement or may be shown by the circumstances of the case. Thus if, with his parents' express or implied consent, a minor makes a contract for his services under which he is personally to receive the benefits of the contract, he is thereby emancipated. . . ." Our conclusion is, said the court, that at the time Charles R. Bishop Jr. entered the hospital he was an emancipated youth, earning his own wages and providing for himself the necessities of life, including hospital services. Accordingly the judgment in favor of the defendant was affirmed.—*Buxton v. Bishop, 37 S. E. (2d) 755 (Va., 1946)*

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Current Medical Literature

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The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1936 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

31:663-806 (June) 1946

*Actinomyces Septicus from Human Endocarditis. Anne Blevins and W. J. MacNeal.—p. 663.

*Clinical Arrest of Endocardial Actinomycosis After 44,000,000 Units of Penicillin. W. J. MacNeal, Anne Blevins and A. W. Duryee.—p. 668.

Electrocardiographic Effects of Injury at Endocardial Surface of Left Ventricle. R. H. Bayley.—p. 677.

Electrocardiographic Changes in Acute Glomerulonephritis. J. S. LaDue and R. Ashman.—p. 685.

Is There a Vagal Pulmonocoronary Reflex in Pulmonary Embolism? M. R. Malinow, L. N. Katz and B. Kondo.—p. 702.

Unstable T Waves in Leads II and III in Persons with Neurocirculatory Asthenia. M. H. Wendkos and R. B. Logue.—p. 711.

Method for Orthodiagraphic Measurement of Transverse Diameter of Heart by Means of Simple Fluoroscope. F. H. Howard.—p. 724.

Effect of Splanchnic Resection on Peripheral Blood Flow and Rectal and Skin Temperatures in Hypertension. H. J. Stewart, W. F. Evans, Helen S. Haskell and Halla Brown.—p. 728.

Myocardial Complications of Cutaneous Diphtheria. C. F. Kay and C. S. Livingood.—p. 744.

Presence and Pathogenesis of Endocardial and Subendocardial Degeneration, Mural Thrombi and Thromboses of Thebesian Veins in Cardiac Failure from Causes Other Than Myocardial Infarction. J. E. Flynn and F. D. Mann.—p. 757.

Actinomyces Septicus from Human Endocarditis.—The micro-organism studied by Blevins and MacNeal was isolated in pure culture on four occasions, Feb. 2, 7, 26 and 28, 1944, from the circulating blood of a patient desperately ill and believed to be suffering from bacterial endocarditis with vegetations on the mitral valve and multiple embolic lesions involving the skin, mucous membranes and brain. The organism is branching and filamentous and exhibits the characteristics of a microaerophilic actinomyces, irregularly gram positive and not acid fast. It was susceptible to the action of penicillin but became more resistant to this agent after prolonged cultivation in vitro. Bacteria belonging to the Actinomycetaceae have been reported in blood cultures during life infrequently. The present microbe is evidently different from these. The name Actinomyces septicus, nov. spec., has been tentatively suggested, pending further advances in the study of this biologic group.

Clinical Arrest of Endocardial Actinomycosis After Penicillin.—MacNeal presents the record of the patient mentioned in the report of Blevins and MacNeal. The man, aged 39, with clinical evidence of mitral endocarditis, complicated by right hemiplegia, aphasia and other signs of grave intracranial injury, and multiple peripheral embolic lesions, has shown so much improvement that the disease is now in a state of arrest. Cultures of the blood yielded growth of an actinomyces. The therapeutic program included rest in bed, sodium salicylate for a period of ten days in July, intravenous and intramuscular injections of penicillin and intravenous injections of thiobismol and citrated blood continued over a period of many months. The total amount of penicillin injected was 43,972,000 units during the period from February 26 to November 21.

Arizona Medicine, Phoenix

3:135-200 (May) 1946

The President's Address. G. O. Bassett.—p. 157.

Classification of Different Types of Diabetes Mellitus, with Discussion of Diagnosis and Treatment of Each. J. A. Greene.—p. 158.

Sickle Cell Anemia. I. P. Stevenson.—p. 161.

Case of Chronic Regional Ileitis. G. G. McKhann, E. R. Charvoz, J. M. Ovens and others.—p. 163.

California and Western Medicine, San Francisco

64:283-334 (May) 1946

Medicine and the Public. P. K. Gilman.—p. 288.

Does the Public Want Health? G. A. Uhl.—p. 290.

Protein Needs of Aged Surgical Patient. D. P. Fagerstrom.—p. 292.

Acute Pulmonary Edema: Report of Case. C. J. Betlach.—p. 296.

Neuroses: Their Expression in Military and Civilian Life. M. L. Miller.—p. 296.

64:335-418 (June) 1946

Electrocardiographic Abnormalities in 6,000 Cases of Rheumatic Fever. M. B. Filberbaum, G. C. Griffith, R. F. Solley and W. H. Leake.—p. 340.

Tularemia Pneumonia: Report of Fatal Case. R. Paull.—p. 346.

Poliomyelitis: Report of Second Attack. D. M. Bissell.—p. 348.

Hypertension—Recent Advances in Our Knowledge. M. Prinzmetal.—p. 349.

Human Plasma—Surplus Dried: Its Distribution in California. M. H. Merrill.—p. 351.

Blast Injury of Spine. L. Cozen.—p. 352.

Pollinosis in Imperial County, Calif., and Yuma, Ariz. G. F. Harsh, —p. 353.

Industrial Physician in Community Health Program. A. V. Nasatir.—p. 354.

Canadian Medical Association Journal, Montreal

55:1-96 (July) 1946

*Prognosis in Minimal Pulmonary Tuberculosis. D. M. Gibson.—p. 1.

Simple and Efficient Method of Treatment of Fractures Involving Ankle. G. A. P. Hurley.—p. 4.

Value of Lumbar Sympathetic Procaine Block. J. C. Luke.—p. 11.

Effect of Low Protein Diet on Structure of Pancreas: Preliminary Report. S. M. Friedman and C. L. Friedman.—p. 15.

Infectious Mononucleosis. C. T. Collins-Williams and C. C. Ferguson.—p. 17.

Treatment of Cystine Calculi. C. A. Cawker.—p. 19.

Concurrent Use of Liver and Thiouracil. C. A. Markson.—p. 23.

Silicones and Blood Coagulation. L. B. Jacques, E. Fidlar, E. T. Feldsted and A. G. MacDonald.—p. 26.

Principles and Practice of Inguinal Herniorrhaphy. S. Marinker.—p. 31.

Identification of Identical Strains of Staphylococci in Food Poisoning and Other Infections by Bacteriophage Typing. W. B. McClure and A. M. Miller.—p. 36.

General Anesthesia for Tonsillectomy. D. H. McIntyre.—p. 39.

Effect of Closed Plaster Treatment on Urinary Loss of Nitrogen After Experimental Burning. E. A. Sellers and J. M. Parker.—p. 41.

Relief of Pain in Labor with Demerol. W. D. Platt.—p. 43.

Orthoptic Treatment in Convergence Insufficiency. C. E. Davies.—p. 47.

Minimal Tuberculosis.—Gibson points out that the diagnosis of minimal tuberculosis according to present nomenclature is based on the extent of the changes seen in an x-ray film. From the point of view of accurate diagnosis this is somewhat inadequate and in prognosis it may be misleading. When a minimal lesion is observed in an x-ray film, it must be further classified as either "probably active" or "possibly arrested." A soft looking opacity in a person under 30 would suggest activity, whereas dense or calcified changes in the higher age groups might well be an arrested lesion. The safe procedure for every case of minimal tuberculosis of probable activity or of doubtful inactivity is admission to a sanatorium, where competent investigation can be carried out, expert opinion can be brought to bear on the case and adequate measures can be employed to supplement simple bed rest. In a certain proportion of minimal cases there are tubercle bacilli in the secretions. This further emphasizes the desirability of admission to a sanatorium from the public health angle. Collapse therapy should not be instituted too precipitately, but it should not be withheld when indicated. Every effort should be made to diagnose tuberculosis of the lungs in the minimal stage by x-raying more and more chests and by repeatedly x-raying the same chest when indicated over a long period of years.

Connecticut State Medical Journal, Hartford

10:461-544 (June) 1946

The Patient in Patient-Physician Relationship. A. M. Schwitalla.—p. 468.

Psychiatry with Psychosomatic Implications in General Hospital. A. B. Musa.—p. 474.

Psychoneurosis in the Veteran. S. M. Gardner.—p. 477.

Prepayment Medical Care. T. P. Murdock.—p. 480.

10:545-624 (July) 1946

The Hospital As Public Service Unit. W. G. Phippen, E. F. Ahern and F. S. Howe.—p. 553.

Penicillin in Rat Bite Fever: Case Report. A. Labensky.—p. 557.

Malaria. J. A. Shannon.—p. 559.

Struma Lymphomatosa. G. Cheney and C. M. Mezey.—p. 564.

Recent Advances in Cutaneous Medicine. J. G. Downing.—p. 566.

Physicians as Metaphysicians. J. S. Bixler.—p. 576.

Delaware State Medical Journal, Wilmington

18:93-112 (May) 1946

Hemochromatosis: Report of Case with Necropsy. E. M. Bohan.—p. 93.
Peritonitis of Appendical Origin. G. S. Serino.—p. 97.
Treatment of Obstinate Case of Aerobacter Bacilluria with Streptomycin. B. B. G. Blackstone, M. D. Sommerness and E. G. Scott.—p. 101.
Rocky Mountain Spotted Fever: Case Treated with p-Aminobenzoic Acid. J. W. Maroney, H. C. Davis and E. G. Scott.—p. 104.

18:113-140 (June) 1946

Comments on Report of Committee on Psychiatric Standards and Policies of American Psychiatric Association. M. A. Tarumianz.—p. 113.
Nervous Veteran, Preliminary Study of Causes. J. A. Doering.—p. 117.
Problems of Psychiatric Diagnosis. G. J. Gordon.—p. 120.
Emotional Vacuum and Alcoholism. F. A. Freyhan.—p. 122.
"Prolonged Electroconvulsive Therapy." G. J. Gordon and M. B. Zimbler.—p. 125.
Verbal Polarity in Dementia Precox. J. Jastak and G. J. Gordon. —p. 131.

Geriatrics, Minneapolis

1:113-184 (March-April) 1946

*Normal Blood Pressure in Senescence: Study of 3,691 White Male Subjects Between Ages of 50 and 95 Years. H. I. Russek and B. L. Zohman.—p. 113.
Transurethral Prostatic Resection on Elderly Patients. T. L. Pool. —p. 121.
*Pancreatitis in Geriatric Practice. W. M. Johnson and O. T. Davis. —p. 125.
Guillain-Barré's Disease in Older Age Group. A. B. Baker.—p. 132.
Senile and Prematurely Senile Skin. F. Ronchese.—p. 144.
Prophylactic Suggestions Regarding Science of Geriatrics. W. R. Stanford.—p. 147.
Cardiovascular Deterioration. H. L. Ulrich.—p. 152.
New Method of Local Treatment of Rheumatoid and Traumatic Affections of Joints, with Emphasis on New Approach in Management of Arthritis and Allied Conditions. O. C. Kestler.—p. 159.

Normal Blood Pressure in Senescence.—Russek and Zohman present statistical analyses of the blood pressure levels of 3,691 white men between the ages of 50 and 95. The variations in blood pressure with age and the deductions drawn therefrom are as follows: The average systolic blood pressure, when all levels are considered, increases significantly with age, whereas the average diastolic blood pressure varies little after the sixth decade. The incidence of "normal" blood pressure (149/95 or less) decreases with age, so that less than half of the subjects aged 60 or older belong to this group. The frequency of systolic hypertension increases sharply, becoming the most common "type" of blood pressure encountered after the age of 75. Approximately one third of the examined subjects 60 years of age and over manifest such elevation. The incidence of diastolic hypertension rises between the sixth and seventh decades and remains relatively unchanged thereafter. Normal systolic blood pressure tends to rise with age; conversely, normal diastolic blood pressure shows a tendency to fall. These changes are explained by the progressive diminution in the elasticity of the aorta and its large branches associated with the process of aging. The same physiologic mechanism is responsible for the increasing incidence of systolic hypertension, which is merely the hemodynamic reflection of normal vascular aging. Hypertensive disease in senescence cannot be defined solely in terms of the systolic blood pressure. The old dictum "100 plus the age" appears to be a fair index of normal systolic blood pressure.

Pancreatitis in Geriatric Practice.—Johnson and Davis report 35 cases of acute pancreatitis. The clinical diagnosis was confirmed in all but 1 by the finding of an elevated serum on urinary amylase, by x-ray, by operation or by a combination of two or more of these methods. Twenty-one of the 35 patients were 45 years of age or older. Twelve of the 21 patients were women and 9 were men. The average age was 57½. Nine of the women and 5 of the men had had previous gallbladder disease; 3 women had had cholecystectomies. Only 1 of the patients had diabetes. Six of the cases were hemorrhagic, the remaining 15 edematous. In all but 1 pain in the epigastrium was the chief symptom. In 5 cases a mass appeared in the epigastrium and persisted for several weeks or until operation. This mass was tender and about the size of an orange. The authors believe that all these cases were hemorrhagic. The duration of the symptoms varied from a few hours to more than three months. Diagnosis of acute pancreatitis is based on the clinical picture plus the finding of an elevated serum or urinary amylase and possible x-ray evidence of an enlarged pancreas. Acute pancreatitis is no longer considered a surgical emergency, since most attacks will subside spontaneously. In the majority of the cases the only treatment necessary is relief of pain. The authors have had to resort to morphine or some other opiate. Food is withheld during the acute state. The fluid balance can be maintained by dextrose or isotonic solution of sodium chloride intravenously. For older patients who have had repeated attacks of pancreatitis, probably on a vascular basis, it seems logical to give glyceryl trinitrate for the attacks and to employ the same regimen as for angina pectoris.

Illinois Medical Journal, Chicago

89:257-306 (June) 1946

President's Address. E. P. Coleman.—p. 267.
Functional Disease vs. Abdominal Surgery. L. D. Whittaker.—p. 271.
Reasons for Ocular Discomfort. R. H. Woods.—p. 276.
Chicago Plan of Tuberculosis Control. F. Tice.—p. 280.
Pilonidal Sinus: Statistical Review of 300 Cases. J. Raider and S. E. Andrews.—p. 288.
Teamwork in Medicine: Woman's Auxiliary as Member of Team. F. P. Hammond.—p. 291.
Pseudospirochetes in Blood. G. H. Gowen.—p. 294.
Granulocytopenia from Combined Use of Thiouracil and Sulfonamides. S. G. Taylor.—p. 296.

Journal of Immunology, Baltimore

53:119-208 (June) 1946

Shigella Sp. Wakefield and Its Relations to Shigella Sp. Sachs Q 454. A. J. Weil, M. Binder and H. Slafkovsky.—p. 119.
Specific Antigen Recovered from Tissue Infected with M. Paratuberculosis (Johne's Bacillus): II. Studies on Nature of Antigen and on Methods for Demasking It. B. Sigurdson.—p. 127.
Differentiation of Disorders of Lymphatic System by Leukoagglutination. B. Steinberg and Ruth A. Martin.—p. 137.
Antigenic Properties of Fibrin Films and Foams Prepared from Human and from Bovine Blood Plasma. J. H. Glynn and J. H. Richardson. —p. 143.
Studies on Chemotherapy of Viruses in Psittacosis-Lymphogranuloma Venereum Group: III. Effect of Certain Chemotherapeutic Agents on Growth of Psittacosis Virus (6BC Strain) in Tissues Cultures and Eggs. R. L. Early and H. R. Morgan.—p. 151.
Sedimentation of Poliomyelitis Virus in Sharples Centrifuge. J. L. Melnick.—p. 157.
Infection of Rats with Virus of Influenza. C. G. Harford, Mary Ruth Smith, Charlotte McLeod and W. B. Wood Jr.—p. 163.
Preliminary Standardization of Cardiolipinlecithin-Cholesterol Antigen for Microprecipitation Test for Syphilis. R. Brown.—p. 171.
Efficiency of Different Sharples Centrifuge Bowls in Concentration of Tobacco Mosaic and Influenza Viruses. W. M. Stanley.—p. 179.
Studies on Physiology of Anaphylactic Shock: I. Anaphylactic Shock in White Rat: Experiments in Vivo. A. Hochwald and F. M. Rackemann.—p. 191.
Studies on Lymphogranuloma Venereum Complement Fixing Antigen: III. Solubility in Ether or Active Fraction. M. R. Hilleman and Clara Nigg.—p. 201.

Journal of International College of Surgeons, Chicago

9:301-418 (May-June) 1946

Amino Acids in Surgery. C. S. White.—p. 301.
Exaggeration Phenomena. A. O. Wilensky.—p. 304.

SYMPOSIUM ON USE OF PENICILLIN

Penicillin in Urology. W. M. Kearns.—p. 319.
Penicillin in Orthopedic Surgery. L. D. Smith.—p. 320.
Penicillin in Ophthalmology. S. G. Higgins.—p. 322.
Penicillin in Diseases of Mouth, Jaws and Face. M. N. Federspiel. —p. 323.
Penicillin in Abdominal Surgery. V. F. Marshall.—p. 324.
Rehabilitation in Navy. H. M. Montgomery.—p. 328.
Obstetric and Gynecologic Problems. G. F. Douglas.—p. 332.
Herniation of Subfascial Fat as Cause of Low Back Pain: Results of Surgical Treatment in 31 Cases. R. Herz.—p. 339.
Primary Malignant Disease of Stomach. R. H. Lawler.—p. 348.
Artificial Pupil in Restoration of Vision. D. T. Atkinson.—p. 365.
Ligation Treatment for Varicose Veins: Estimate of Present Status of This Method. E. D. Lawrence.—p. 370.
Evaluation of Methods of Study of Peripheral Vascular Circulation. S. Lisker.—p. 377.
Observations on Eyelids. W. Oliver Lodge.—p. 383.
Responsibility of Surgeon in Preservation of Human Fertility. Frances I. Seymour and A. Koerner.—p. 389.
Occupational Therapy in Rehabilitation of Surgical Cases. Helen S. Willard.—p. 395.
Classic Cesarean Section. D. Albino Roman.—p. 400.
Micrognathia—Prosthesis of Paladón. E. F. Malbec.—p. 412.

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Journal of Investigative Dermatology, Baltimore

7:131-148 (June) 1946

*Sodium Bicarbonate: Excellent Deodorant. J. H. Lamb.—p. 131.

Use of Spectrophotometer in Capillary Tube Colorimetry for Determination of Reducing Substances (Glucose), Chlorides, Ammonia Nitrogen, Uric Acid and Creatinine. W. C. Lobitz Jr. and A. E. Osterberg. —p. 135.

Chloroamide Containing Ointments in Prevention of Experimental Poison Ivy Dermatitis: Preliminary Report. Marion B. Sulzberger, R. L. Baer and A. Kanof.—p. 145.

Pyribenzamine in Treatment of Itching Skin Conditions: Preliminary Report. R. L. Baer and Marion B. Sulzberger.—p. 147.

Sodium Bicarbonate as Deodorant.—Lamb has made clinical studies on more than 90 persons and has found that sodium bicarbonate is a valuable underarm deodorant for common daily usage. No furunculosis has developed in persons who have used sodium bicarbonate over periods of from four weeks to a year's duration. The author tested the action of sodium bicarbonate in cases of extreme bromidrosis. The effect was immediate. The room was cleared of any perceptible odor, and most of the patients were extremely grateful for the suggestion of a cheap method of stopping the fetid odors of sweat. The mechanism of the deodorant action of sodium bicarbonate requires elucidation.

Journal of Lab. and Clinical Medicine, St. Louis

31:609-720 (June) 1946

*Severe Scurvy: Clinical and Hematologic Study. R. W. Vilter, R. M. Woolford and T. D. Spies.—p. 609.

Effect of Folic Acid (Lactobacillus Casei Factor) in Nutritional Hematopenia of Monkeys. H. E. Wilson, S. Saslaw and C. A. Doan. —p. 631.

*Further Observations on Antianemic Properties of 5-Methyl Uracil. W. B. Frommeyer Jr., T. D. Spies, C. F. Vilter and Ann English. —p. 643.

Effect of Penicillin and Sulfonamides of Acetylcholine Synthesis and on Response of Muscle to Acetylcholine and Potassium. Clara Torda and H. G. Wolff.—p. 650.

Antishock Action of Ethanol in Burned Mice: Effect on Edema Formation and Capillary Atony. H. C. Bergman and M. Prinzmetal.—p. 654.

Antishock Action of Certain Drugs in Burned Mice. H. C. Bergman and M. Prinzmetal.—p. 663.

Therapeutic Induction of Fever and Leukocytosis Using Purified Typhoid Pyrogen. G. O. Favorite and H. R. Morgan.—p. 672.

Colorimetric Diagnostic Test for Malaria. H. J. Carlson, M. G. Mueller and H. D. Bissell.—p. 677.

*Heberden's Nodes: V. Association of Hypertension and Obesity to Degenerative Joint Disease of Fingers. R. M. Stecher.—p. 687.

Determination of Sulfonamides in Tungstic Acid (Folin-Wu) Blood Filtrates. E. G. Schmidt.—p. 694.

Simply Constructed Metabolism Cage for Small Rats. E. C. Slater and C. C. Kratzing.—p. 700.

Improved Method for Determination of Plasma Prothrombin. C. A. Tanturi and R. F. Banfi.—p. 703.

Antisheep Amboceptor Production with Elimination of Rabbit Shock. H. P. Sawyer and Anne R. Bourke.—p. 714.

Rapid Method for Drying Oxalate Solutions. J. T. Van Bruggen. —p. 717.

Severe Scurvy.—Vilter and his associates describe the prodromal period and the clinical aspects of severe scurvy in 19 cases at the Cincinnati General Hospital over the past ten years. Perifollicular hemorrhages, ecchymoses, swollen painful joints and swollen blue-red tender gums were observed frequently. Blood pressures tended to be low, and many of the patients were bordering on vascular collapse. All but 2 of the 19 patients had anemia. Complete hematologic studies were carried out on 11 patients. The anemia was normochromic and normocytic or slightly macrocytic. Persistent reticulocytosis, moderate leukopenia and thrombopenia occurred frequently. Moderate icterus of the hemolytic type was noted in most of the patients. The bone marrow appeared moderately hypocellular in 1 patient and normally cellular or hypercellular in the others. Differential counts of nucleated marrow cells indicated a relative increase in normoblasts and in the younger members of the red cell series. Two patients with mild or moderately severe scurvy improved clinically and hematologically after bed rest. In 9 severely scorbutic patients, despite persistent reticulocytosis, erythrocyte counts and hemoglobin levels were unchanged or fell while the patients were in bed on a vitamin C restricted diet. Hematologic and clinical improvement occurred in each of these patients after crystalline vitamin C was administered. The concept of the multiple deficiency state, with many factors besides vitamin C deficiency adversely affecting the bone marrow, can explain the many conflicting reports on scorbutic anemia. In these 11 consecutive patients the anemia of scurvy occurred primarily because of vitamin C deficiency.

Antianemic Properties of 5-Methyl Uracil.—Frommeyer and his associates use the term 5-methyl uracil in preference to thymine in order to avoid confusion with thiamine. Having observed that the administration of 1 Gm. or less of 5-methyl uracil gave no hematologic response when given to patients with nutritional macrocytic anemia, the anemia of sprue and pernicious anemia in relapse, they decided to use higher doses. They selected for study patients with pernicious anemia in relapse. The patients were hospitalized and given a diet devoid of meat, meat products, fish, poultry and raw vegetables. After an initial period of base line studies, synthetic 5-methyl uracil was administered in varying doses by mouth to each patient. In 6 patients a hematologic response was produced by the daily oral administration of synthetic 5-methyl uracil when given in doses of 4.5 Gm. or more. Case 1 is of special interest in that the hematologic response to larger doses of 5-methyl uracil was reduplicated after a period of forty-five days in which no therapy was given. Case 2 shows the production of calculated maximal hematologic response after the daily oral administration of 10.2 Gm. of 5-methyl uracil. It is concluded that synthetic 5-methyl uracil is a potent antianemic substance when given orally in daily doses of 4.5 Gm. or more to patients with pernicious anemia in relapse.

Heberden's Nodes.—Stecher investigated the blood pressure of 112 women with Heberden's nodes and of 92 women of approximately the same age distribution but otherwise selected at random. The average blood pressures for each age decade were the same in all groups. After combining the series into one group, no significant association between Heberden's nodes and hypertension could be demonstrated. Heberden's nodes were not found more frequently in a series of 82 women with hypertension than could be expected from the incidence of this disease in the population in general. Heberden's nodes or degenerative joint disease of the fingers is no different in relation to hypertension than is degenerative joint disease of other joints. Despite the fact that a strong positive association has been demonstrated between degenerative joint disease and obesity, no such association was found in this series between Heberden's nodes and obesity. In this respect Heberden's nodes or degenerative joint disease of the fingers differs widely from degenerative disease of other joints.

Journal of Nutrition, Philadelphia

31:647-788 (June) 1946

Effect of Variations in Level of Dietary Calcium on Growth of Young Rats. Anne Williamson, D. M. Hegsted, J. M. McKibbin and F. J. Stare.—p. 647.

Phosphorus Metabolism of Preschool Children. Beula V. McKey, Marie Folsom Clark, Frieda L. Meyer and Milicent L. Hathaway. —p. 657.

Nitrogen Metabolism of Preschool Children. Marion S. Lew, Dorothy D. Clagett, Frieda L. Meyer and Milicent L. Hathaway.—p. 665.

Comparative Growth Promoting Value of Proteins of Wheat Germ, Corn Germ and of Some Other Protein Foods of Plant and Animal Origin. D. B. Jones and Katherine D. Widness.—p. 675.

Study of Pyridoxine and Pantothenic Acid Deficiencies in Monkey (Macaca Mulatta). K. B. McCall, H. A. Waisman, C. A. Elvehjem and Edith S. Jones.—p. 685.

Covitamin Studies: V. Interrelation of Alpha-Tocopherol and Essential Unsaturated Fat Acids. E. L. Hove and P. L. Harris.—p. 699.

Biologic Value of Proteins in Relation to Essential Amino Acids Which They Contain: III. Comparison of Proteins with Mixtures of Amino Acids. J. R. Murlin, L. E. Edwards, Seraphine Fried and T. A. Szymanski.—p. 715.

Studies on Comparative Nutritive Value of Fats: VII. Growth Rate with Restricted Calories and on Injection of Growth Hormone. H. J. Deuel Jr., Cornelia Hendrick and Mary E. Crockett.—p. 737.

Id.: VIII. Failure of Ether Extraction to Lower Nutritive Value of Skimmed Milk Powder in Diets Containing Various Vegetable Fats. H. J. Deuel Jr., Cornelia Hendrick, E. Movitt, Mary E. Crockett, Irene M. Smyth and R. J. Winzler.—p. 747.

Thiamine, Riboflavin, Nicotinic Acid, Pantothenic Acid and Ascorbic Acid Content of Restaurant Foods. H. P. Sarett, Margaret Jean Bennett, T. R. Riggs and V. H. Cheldelin.—p. 755.

Comparative Value of Certain Dietary Proteins for Hemopoiesis in Rat. J. M. Orten and A. Underhill Orten.—p. 765.

J. of Pharmacology & Exper. Therap., Baltimore

87:73-192 (June) 1946

Pharmacology of Lobelan and Related Compounds. R. H. K. Foster, Lucille J. Moench and H. C. Clark.—p. 73.
Secretion of Pancreatic Juice in Presence of Atropine or Hyoscyamine in Chronic Fistula Dogs. J. E. Thomas and J. O. Cride.—p. 81.
Studies on Pharmacology of Fluoroacetate: I. Species Response to Fluoroacetate. M. B. Chenoweth and A. Gilman.—p. 90.
Response of Isolated Frog Heart to Different Barbiturates. C. M. Gruber and G. F. Keyser.—p. 104.
Inhibition of Cholinesterase by Aromatic Amino Alcohols of Type Ar-CHOHCH$_2$NR$_2$. C. I. Wright.—p. 109.
Myotropic Spasmolytic, Histaminolytic and Atropine-like Actions of Some Derivatives of Dimethylaminoethyl Benzhydryl Ether Hydrochloride (Benadryl). C. V. Winder, Margaret E. Kaiser, Mona M. Anderson and Elizabeth M. Glassco.—p. 121.
Anesthesia: XXII. Anesthetic Action of Isopropyl Methyl Ether. J. C. Krantz Jr., C. Jelleff Carr, W. E. Evans Jr. and Ruth Musser.—p. 132.
Blockade of Nicotine Action on Blood Pressure by Thiazole Compounds (Sulfathiazole and Thiamine). E. P. Pick and K. Unna.—p. 138.
Studies on Mechanism of Action of Sympathomimetic Amines: III. Oxidation of Tyramine by Rat Liver Homogenates. W. M. Govier, Mary E. Grelis, Naomi S. Yanz and K. H. Beyer.—p. 149.
Evaluation of Rhodamine B Method for Determination of Antimony. A. Gellhorn, M. E. Krahl and J. W. Fertig.—p. 159.
Tissue Distribution and Excretion of Four Organic Antimonials After Single or Repeated Administration to Normal Hamsters. A. Gellhorn, Natalia A. Tupikova and H. B. van Dyke.—p. 169.
Chemotherapy of Filariasis (Litomosoides Carinii) in Cotton Rat by Administration of Stibanose (Solustibosan). J. T. Culbertson and Elizabeth Pearce.—p. 181.
Site of Action of Narcotics on Brain Metabolism. Margaret E. Greig.—p. 185.

Journal of Urology, Baltimore

55:571-690 (June) 1946

*Prognosis and Problems in Renal Tumors. C. L. Deming.—p. 571.
Thrombosis of Inferior Vena Cava Associated with Malignant Renal Tumors. C. Ney.—p. 583.
Abortive Therapy for Perinephric Abscess. C. A. Fort.—p. 591.
Translumbar Aortagraphy: Its Diagnostic Value in Urology. A. Keller Doss.—p. 594.
Treatment of Carcinoma of Bladder for Past Five Years, with Special Reference to Closed Method of Treatment. W. A. Milner.—p. 607.
Topical Use of Clotting Agents in Surgery of Prostate Gland. F. C. Hendrickson.—p. 613.
Questionable Cancer of Prostate Gland: Clinical versus Routine Pathologic Evidence. J. A. Lazarus.—p. 618.
Primary Carcinoma of Prostate of Twelve Years' Duration: Case Report. J. E. Flynn.—p. 626.
Liver Changes and Other Effects of Diethylstilbestrol During Treatment of Prostate Gland Cancer. C. A. Wattenberg.—p. 631.
Hormone Therapy in Urologic Practice. H. McClure Young.—p. 641.
Stress Incontinence in Women. R. E. Van Duzen.—p. 648.
Clinical and Pathologic Study of Posterior Female Urethra. R. L. Deter, G. T. Caldwell and A. d. Folsom.—p. 651.
Solitary Testicular Metastasis Simulating Primary Tumor and Antedating Clinical Hypernephroma of Kidney: Report of Case. C. G. Bandler and P. R. Roen.—p. 663.
Erosive and Gangrenous Balanitis: Report of Case. P. L. Getzoff.—p. 670.
Treatment of Urinary Infections with Mandelamine (Methenamine Mandelate): Clinical Study of 200 Cases. G. Carroll and H. N. Allen.—p. 674.
Retention Urethral Catheter. C. A. Eberhart.—p. 682.

Prognosis in Renal Tumors.—Deming reports 82 cases of renal tumor observed at the New Haven Hospital during the past twenty-three years. Seven of the 82 patients were hospitalized in a serious condition and died within a few days. Of the other 75 patients 69 had a nephrectomy, 4 had a biopsy of the tumor with ligation of the ureter and 2 a biopsy of the tumor. There were 4 operative deaths. Many patients died of the tumor before the fifth postoperative year, others between the fifth and tenth years, and 2 died of metastases ten and one-half years and eleven and one-half years respectively, both patients having hypernephromas. There were 19.5 per cent living at the end of five years and 14.6 per cent at the end of ten years, but only 9.08 per cent free from tumor after the ten year period. Those with sympathicoblastomas and embryonic carcinomas all died within a three year period. The tumors of the kidney pelvis, both the papilloma and epidermoid tumors, are problematic even with complete resection of the ureter, which is essential. The prognosis is not over 9.08 per cent control in this series. This reduces the generally accepted percentage of a 20 per cent control to less than half. The author considers it doubtful whether the so-called controlled patients in this series had tumors which could withstand both the pathologic and biologic tests for malignancy. Their recovery can be explained in addition to surgery either on the basis of a nonmalignant tumor by biologic tests or by natural factors of defense.

Kentucky Medical Journal, Bowling Green

44:185-210 (June) 1946

Hematuria: Its Medical and Surgical Significance. J. A. Bowen.—p. 190.
Tuberculosis (Information Please). O. O. Miller.—p. 192.
Comments on Diagnosis and Management of Gallbladder Disease. M. B. Welborn.—p. 199.
Ruptured Abdominal Aneurysm: Case Report. G. W. Pedigo Jr. and D. E. Nolan.—p. 202.

44:211-238 (July) 1946

Notes on Southeastern Surgical Congress Memphis, March 11-13, 1946. M. Casper.—p. 213.
Virus Pneumonia. E. C. Sienknecht.—p. 217.
Hernia Repair: Analysis of 72 Cases. B. B. Baughman.—p. 219.
Rheumatic Fever: Clinical Survey of 542 Cases, with Reference to Unusual Precipitating Factors: Case Reports. W. H. Rosenblatt.—p. 222.
Summary of Meningococcal Infections Admitted to Isolation Ward of Louisville General Hospital for the Year 1944. E. P. Scott, C. C. Rotondo and E. Podoll.—p. 228.

Military Surgeon, Washington, D. C.

99:1-88 (July) 1946

Army's Medical Research Program During World War II. J. S. Simmons.—p. 1.
Intra-Abdominal Surgical Technic. W. S. Bainbridge.—p. 5.
Air Evacuation of Sick and Wounded. S. Leibowitz.—p. 7.
Visceral Leishmaniasis. S. P. Waud and D. Musgrave.—p. 11.
Duties of Military Malariologist. E. Farrell.—p. 15.
Why is Neurosyphilis Uncommon in the Tropics? J. L. McCartney.—p. 21.
Buie Operation for Cure of Infected Pilonidal Cysts. B. H. Henning and T. F. Dempsey.—p. 23.
Penicillin and Bone Grafting Operations: Evaluation of Operations Performed Without Penicillin and Those Performed With Penicillin. H. E. Branch and L. F. Moldavsky.—p. 25.
Convenient Flexion-Extension Leg Support for Nerve Surgery of Lower Extremity. I. W. Brown Jr.—p. 32.
Study and Treatment of 27 Cases of Schistosomiasis Mansoni with Fuadin. J. T. Marconis.—p. 34.
Protective Cover for Laboratory Reagent Bottles. R. Roseman, H. G. Thorp Jr. and B. W. Allan.—p. 40.
Army Medical Organization: Presentation of Case. J. S. Billings.—p. 40.

New England Journal of Medicine, Boston

234:773-808 (June 13) 1946

Nutrition and the War. J. B. Youmans.—p. 773.
*Use of South African Frog (Xenopus Levis) in Diagnosis of Pregnancy. S. L. Robbins, F. Parker Jr. and W. C. Doyle.—p. 784.
Oral Lesions of Monocytic Leukemia: Report of Case. F. P. McCarthy and P. H. Karcher.—p. 787.
Fluorine and Dental Caries (concluded). V. A. Getting.—p. 791.
Sulfonamide Nephrosis. General Peritonitis.—p. 798.
Benign Stricture of Esophagus.—p. 801.

234:809-848 (June 20) 1946

Gastric Surgery. F. H. Lahey.—p. 809.
Presidential Address: Motivations and Opportunities. J. R. Miller.—p. 823.
Acute Hemolytic Anemia in Primary Atypical Pneumonia Associated with High Titer of Cold Agglutinins: Report of Case. H. S. Ginsberg.—p. 826.
Hematology. W. Dameshek.—p. 829.
Pulmonary Metastasis from Adenoacanthoma of Uterus.—p. 839.
Adenoma of Bronchus.—p. 843.

South African Frog (Xenopus Levis) in Diagnosis of Pregnancy.—Robbins and his associates demonstrate that the extrusion of eggs by the South African clawed frog on stimulation by mammalian gonadotropic hormones, such as are excreted in the urine of women during pregnancy, offers a desirable test for pregnancy. Among its advantages are speed, since ordinarily only eight to twelve hours are required for a positive reaction; ease in the performance and reading of the test; economy, since the animals can be reused over many years, and simplicity in feeding and maintenance of the animals. In 100 consecutive routine urine analyses the test gave no false positive reactions, but in 4 cases of low titer urines it failed to give a positive reaction. It is believed that with minor modifications in the original technic these false negative reactions can be avoided and that this test can be made to compare favorably with the older, more widely accepted rabbit, rat and mouse tests.

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North Carolina Medical Journal, Winston-Salem

7:285-336 (July) 1946

Medicine in Postwar World. M. Fishbein.—p. 285.
Future Implications of Army's Wartime Experience with Tropical Diseases. J. S. Simmons.—p. 291.
*Poliomyelitis in North Carolina. C. P. Stevick.—p. 297.
Role of Hyperimmune Human Serum in Prevention and Treatment of Pertussis. E. P. Ewers.—p. 304.
Symptomatic Relief of Allergic Reaction with Antihistamine Drug Benadryl. L. C. Todd.—p. 308.

Poliomyelitis in North Carolina.—In 1944 North Carolina had the largest number of cases of poliomyelitis ever reported in the state. The long term curve of the annual incidence of the disease in North Carolina as compared with that in other states gives no clear indicators that might be of value in forecasting epidemics. The age groups most commonly affected in North Carolina are those from 1 through 15 years, with a small but important group over the age of 20 years amounting to approximately 6 per cent of the total number of cases. During epidemics the peak of the curve of annual incidence has occurred in June and July, which is about one month earlier than in nonepidemic years. Over a period of years the recorded poliomyelitis case fatality rate in North Carolina has varied from approximately 5 per cent to 50 per cent, with the lowest fatality rates occurring in the epidemic years and the highest in the years of lowest incidence. The case fatality rate of 4.4 per cent for 1944 was the lowest ever recorded, while the total number of the cases reported was larger than in any previous year.

Public Health Reports, Washington, D. C.

61:847-914 (June 14) 1946

*Electrocardiographic Alterations in Adult Rats as Result of Acute Thiamine Deficiency. J. M. Hundley and W. H. Sebrell.—p. 847.
Studies of Acute Diarrheal Diseases: XVII. Sulfonamides in Shigellosis. A. V. Hardy.—p. 857.
Full Time Public Health Positions in Local Health Departments. Marion E. Altenderfer.—p. 866.
Tularemia: First Case to be Reported in Alaska. R. B. Williams.—p. 875.
Performance Test for Rating Dishwashing Detergents. E. H. Mann and C. C. Ruchhoft.—p. 877.
Serologic Study of 37 Cases of Tsutsugamushi Disease (Scrub Typhus) Occurring in Burma and Philippine Islands. Ida A. Bengtson.—p. 887.
Complement Fixation in Tsutsugamushi Disease (Scrub Typhus). Ida A. Bengtson.—p. 895.

61:915-942 (June 21) 1946

Incidence of Poliomyelitis in United States in 1945. C. C. Dauer.—p. 915.
Plasmodium Gallinaceum Infection Characterized by Predominance of Exoerythrocytic Forms. V. H. Haas, Aimee Wilcox, Frances Park Davis and Frances Moore Ewing.—p. 921.
Prevalence of Typhus Complement Fixing Antibodies in Human Serums in San Antonio, Texas. D. E. Davis and M. Pollard.—p. 928.

Electrocardiographic Alterations in Rats with Thiamine Deficiency.—Hundley and Sebrell describe pathologic and electrocardiographic abnormalities that develop in young rats in chronic thiamine deficiency. They found that 9 month old rats developed a variety of electrocardiographic defects when they became acutely deficient in thiamine. The changes included bradycardia, sinus arrhythmia, sinus arrest, ectopic beats, delayed auriculoventricular conduction (PR), widened QRS complexes, bundle branch block, auricular fibrillation, idioventricular rhythm, notched, inverted or otherwise variable P waves, inverted or diphasic T waves and depression or elevation of the T wave take-off. The response of these changes of thiamine therapy was variable. Some revert promptly and completely, others slowly or not at all.

61:943-978 (June 28) 1946

*Promizole Treatment of Leprosy: Preliminary Report. G. H. Faget, R. C. Pogge and F. A. Johansen.—p. 957.
Present Status of Diasone in Treatment of Leprosy: Brief Clinical Note. G. H. Faget, R. C. Pogge and F. A. Johansen.—p. 960.

Promizole in Leprosy.—Faget and his associates gave promizole (2, 4'-diamino-5-thiasolylphenyl sulfone) to 11 patients with leprosy. These patients were started on doses of 0.5 Gm. three times daily, the dosage being gradually increased to 2 Gm. three times daily over a period of several weeks. In 2 of the 11 patients it was necessary to discontinue the drug because of toxic reactions. After six months of treatment, objective clinical improvement was observed in some of the patients. The therapeutic results thus far obtained are sufficiently encouraging to warrant further clinical study, which will be necessary before a final evaluation of promizole in the treatment of leprosy can be made.

Quarterly J. Studies on Alcohol, New Haven, Conn.

7:1-192 (June) 1946

Phases in the Drinking History of Alcoholics: Analysis of Survey Conducted by Official Organ of Alcoholics Anonymous. E. M. Jellinek.—p. 1.
Potentiation of Depressant Action of Alcohol by Adrenalin. H. R. Hulpieu and V. V. Cole.—p. 89.
Group Therapy in Outpatient Clinic for Treatment of Alcoholism. R. G. McCarthy.—p. 98.
Alcohol Problem and Law: III. Beginnings of Alcoholic-Beverage Control Laws in America. E. G. Baird.—p. 110.

Rocky Mountain Medical Journal, Denver

43:441-528 (June) 1946

Functional Approach to Diagnosis and Treatment of Static Foot Disorders. A. Pond.—p. 459.
American Medicine and Its Responsibility: Message to the Graduating Class of 1946. W. Darley.—p. 464.
Surgical Cure of Acne Rosacea and Rhinophyma. D. W. Macomber.—p. 466.
Disorders of Heart Beat. A. Ravin.—p. 468.

43:529-608 (July) 1946

Transthoracic Resection of Esophagus for Carcinoma. E. A. Lawrence.—p. 547.
Colorado's Laboratory Approval Program. W. H. Gaub.—p. 554.
Serum Sickness-like Reactions from Penicillin. E. A. Strakosch.—p. 558.
Failure of Immune Serum Globulin to Prevent or Modify Course of Infectious Hepatitis, Homologous Serum Type. R. W. Robinson, W. N. Hamblin, R. S. Fleming and F. B. Queen.—p. 560.
Regulation of Anterior Pituitary Activity During Stress. G. Sayers and M. A. Sayers.—p. 561.

Surgery, Gynecology and Obstetrics, Chicago

83:1-144 (July) 1946

*Local Chemotherapy of Wounds: Tissue Toxicity of Certain Antibacterial Substances. E. L. Howes.—p. 1.
Anomalous Innervation of Intrinsic Muscles of Hand. F. Murphey, J. W. Kirklin and A. I. Finlayson.—p. 15.
Reconstructive Operations for Benign Stricture of Bile Ducts. F. M. Flickinger and J. C. Masson.—p. 24.
Repair of Nasal Defects with Median Forehead Flap: Primary Closure of Forehead Wound. V. H. Kazanjian.—p. 37.
Surgical Treatment of Acute Cholecystitis. F. Glenn.—p. 50.
Observations on Concept of Inguinal Hernia Repair. W. Bartlett Jr.—p. 55.
*Gastric Digestion of Living Tissue. P. B. Price and T. F. Lee.—p. 61.
*Local Application of Nitrofuran Compounds, with Special Reference to Use on Wounds. M. C. Dodd, F. W. Hartmann and W. C. Ward.—p. 73.
Malignant Lesions of Duodenum. C. F. Dixon, A. L. Lichtman, H. M. Weber and J. R. McDonald.—p. 83.
Pilonidal Sinus—Treatment by Primary Closure. E. Holman.—p. 94.
Use of Penicillin Therapy in Conjunction with Free Bone Grafting in Infected Areas. L. C. Abbott, F. C. Bost, E. R. Schottstaedt and others.—p. 101.
Structure of Calcaneal Tendon (of Achilles) in Relation to Orthopedic Surgery with Additional Observations on Plantaris Muscle. E. J. Cummins, B. J. Anson, B. W. Carr and R. R. Wright.—p. 107.
Foreign Bodies in, and in Relation to, Thoracic Blood Vessels and Heart: I. Technics for Approaching and Removing Foreign Bodies from Chambers of Heart. D. E. Harken.—p. 117.
Fractures of Upper End and Shaft of Humerus: Simple Conservative Method of Treatment. L. Jones.—p. 126.

Toxicity of Antibacterial Substances in Chemotherapy of Wounds.—The substances tested by Howes were streptomycin, sulfamylon (4-amino-2-methyl benzene sulfonamide hydrochloride), calcium penicillin, parachlorophenol, tyrothricin and zephiran (benzyl trialkyl ammonium chloride). They found that for local chemotherapy 5 per cent sulfamylon seems to be superior to the other antibacterial substances tested. It possesses the widest range of antibacterial activity and is relatively nontoxic. It is active in the presence of pus and blood and is not affected by changes in the acidity of the environment. It is rapidly bactericidal but should not be used in a concentration of less than 3 per cent. Neutralized sulfamylon should be used. Streptomycin is next best. It failed to attack the streptococcus in concentrations of 200 units per cubic centimeter, and this antibiotic is destroyed by increase in the acidity of the environment. Like sulfamylon, streptomycin acts rapidly in the pres-

ence of blood and is relatively nontoxic. Penicillin is placed third. It is nontoxic but is readily destroyed by changes in p_H and possesses a narrow range of bacterial activity. Resistant strains are not infrequently encountered, and this antibiotic becomes almost worthless in the presence of a mixed infection. The mixture of sulfamylon 5 per cent and streptomycin is nontoxic, is relatively stable in the wound and has almost a complete range of bacterial activity, including the anaerobes of gas gangrene. Thirty contaminated wounds have been successfully sutured after a mixture of sulfamylon and streptomycin was used as a subcutaneous antiseptic. Soft white healing was obtained. This mixture was used unsuccessfully, however, in the treatment of open wounds containing slough and sequestrums. Tyrothricin, parachlorophenol and zephiran have a toxicity which permits their use only on granulating wounds.

Gastric Digestion of Living Tissue.—Price and Lee made experimental studies to determine whether or not living tissues are susceptible to ordinary gastric digestion. Omentum, intestine, liver, gallbladder, pancreas, spleen, kidney, lung, cartilage, skin and even the gastric wall itself were subjected to gastric digestion in healthy dogs by implanting living tissues and organs in the lumen of the stomach or by insuring prolonged surface contact with gastric secretion. Virtually all the tissues tested underwent digestion. The tissues most rapidly digested were the external coats of hollow organs (intestine, appendix, gallbladder); those most resistant were fibrous connective tissue, skin and intestinal mucosa. The seromuscular coat of the stomach itself was not exempt from autodigestion. The one tissue which seemed to be immune to ordinary digestion was gastric epithelium. Organs and tissues projecting into the lumen of the stomach were much more rapidly and completely digested than were those which were placed tangentially in a gastric window. Living tissues undergoing digestion showed different reactions. Serous surfaces became acutely inflamed, with rapid leukocytic infiltration and necrosis. The omentum and the capsules of liver, spleen and kidney responded with excessive fibrosis. The parenchyma of solid viscera presented complex pictures of fibrosis, hemorrhages, cellular infiltration and necrosis. Muscle tended to produce granulation tissue at the corroding surface. Epidermal surfaces slowly eroded, with little or no cellular reaction. Microscopic study suggests that a surface of active fibrosis offers resistance to digestion, that even more opposition is offered by a layer of granulation tissue and that these surfaces act as barriers to the destructive action of acid chyme. Such tissue responses serve as protective mechanisms, delaying the progress of corrosion until healing can take place by means of fibrous contraction of the gastric defect and proliferation of gastric epithelium across the base of the ulcer. Once tissues are covered with proliferating gastric epithelium, they appear to be safe from further corrosive action of normal gastric juice.

Local Application of Nitrofuran to Wounds.—Dodd and his associates found that a series of nitrofuran compounds are bacteriostatic and bactericidal for a variety of gram positive and gram negative organisms in low concentrations. The bactericidal activity of several of these compounds is not abolished by the presence of blood or serum. Some of these compounds are nontoxic for laboratory animals in moderately large doses. These facts suggested the possible clinical use of nitrofuran compounds in the treatment of infected wounds. The authors tested five nitrofuran compounds of previously proved antibacterial activity for irritation to human skin and for toxicity and effect on healing when applied to wounds in rabbits. Two compounds, n-propyl-5-nitro-2-furoate and 5-nitro-2-furaldehyde semicarbazone, were found to be nonirritating and nontoxic, and to have no adverse effect on healing under the conditions of the experiments. Because of its superior antibacterial activity, 5-nitro-2-furaldehyde semicarbazone has been recommended for clinical trial in infected wounds, and preliminary trials show favorable clinical and bacteriologic results.

West Virginia Medical Journal, Charleston

42:139-170 (June) 1946

Up to Now. A. E. Amick.—p. 139.
Primary Omental Torsion—Clinical Aspects: Case Report. S. W. Meyer and B. I. Golden.—p. 142.
Surgical Diseases of Lung. E. J. McGrath and F. M. Woods.—p. 145.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

27:63-134 (April) 1946

Effect of Diet on Ascorbic Acid Content of Liver in Mice. E. L. Kennaway and M. E. Daff.—p. 63.
Determination of Coagulase and Alpha-Hemolysin Production by Staphylococci. R. E. O. Williams and G. J. Harper.—p. 72.
Virus Content of Plants Suffering from Tobacco Mosaic. F. C. Bawden and N. W. Pirie.—p. 81.
Effect of Penicillin Combined with Neoarsphenamine on Lesions and Serologic Titer of Experimental Syphilis. F. R. Selbie and S. Hebbert.—p. 91.
Retesting of Strain IF of Mice Specially Sensitive to Carcinogenic Agents Applied to Skin. E. C. Armstrong and G. M. Bonser.—p. 97.
*Incidence of Rh Types in British Population. J. Murray.—p. 102.
Release of Antibody by Sensitized Antigens. C. E. Jenkins.—p. 111.
Preparation of Pure Flagellar Antigens from Salmonella. C. E. Jenkins.—p. 121.
Study of Prozones of Salmonella. C. E. Jenkins.—p. 127.

Incidence of Rh Types in British Population.—Murray conducted an investigation to discover the incidence of Rh types. Specimens of the blood of 1,038 unselected people from the London area have been examined. Four different types of Rh antibodies were used. The results are interpreted with the author's numerical notation, and a statistical analysis of the results is given. Reasons are given for suggesting the order of Rh genes on a chromosome and the spacing of loci to be unequal. The proposal of Fisher and Race that rarer types could have been produced from the common Rh types by crossover of genes is demonstrated, and the order of loci suggested by them is criticized. The theory of production of rare types is shown to be consistent with the occurrence of further and rarer genes produced by mutation; for example, the mutant C^w described by Callender and others. The possible origin of man from three pure stocks is discussed. Predicted reactions of further possible antigens caused by mutant genes at the middle and bottom loci on the chromosomes are given.

British Journal of Ophthalmology, London

30:381-436 (July) 1946

Statistical Analysis of Persons Certified Blind in Scotland. R. M. Dickson.—p. 381.
*Local Treatment of Intrabulbar Infections: 6. Treatment of Staphylococcus Panophthalmia by Intrabulbar Injection of Penicillin. G. Roenne.—p. 405.
*Retinal Detachment Due to War Trauma. H. B. Stallard.—p. 419.

Intrabulbar Penicillin Injections.—Roenne inoculated rabbits by intravitreal injection with various inoculums of a highly virulent strain of Staphylococcus aureus. Four experimental groups of animals were treated with increasing amounts of penicillin. Growth curves for all inoculums employed were drawn with the logarithm of the bacterial concentration as the ordinate and with the experimental time in hours as the abscissa. Calculated penicillin concentrations were compared with the appropriate inoculums and the values plotted which were found in a coordinate system in which the axes are the logarithm of the bacteria concentration and the logarithm of the penicillin concentration. Results showed that in therapeutic concentrations of 100 to 500 Oxford units the injection of penicillin into the vitreous body is practically harmless. Intravitreal penicillin treatment of infections in the vitreous body is highly effective compared with other forms of application and other substances. The effectivity of the treatment is directly proportional to the concentration of penicillin. Within fairly wide limits the result of the treatment is dependent only on the number of bacteria in the eye and not on the interval between inoculation and treatment. The velocity of absorption of penicillin from the vitreous body is expressed by the halving time, i. e. the time at which half of the penicillin has disappeared, which is about six hours. The function: logarithm of the bacterial concentration—logarithm of the therapeutic penicillin concentration is of first degree. For intrabulbar, particularly intravitreal, inflammation the injection of penicillin into the vitreous body is to be considered the best therapy

at the present time because of the maintenance of a bactericidal concentration of penicillin for a long period (sixteen to twenty-four hours) and because only small quantities of penicillin are required.

Retinal Detachment Due to War Trauma.—Stallard reports 20 cases of retinal detachment due to trauma from military missiles in officers and soldiers, 16 of whom were between the ages of 20 and 30 and 4 between 31 and 40. Eighteen of these occurred in the Western desert campaign 1941 to 1943 and 2 in the invasion of Normandy, Belgium and Germany in 1944 to 1945. A retinal tear was present in 5 cases; in 2 cases there was doubt as to the presence of a minute tear; in the remaining 13 cases no tear was evident. There was prolapse of vitreous at the site of a penetrating wound in 1 case; a moderate vitreous hemorrhage was evident in 7 cases; the contracture of organized bands of fibrous tissues was a factor in producing the detachment in 9 cases. In 1 case in this series of 20 the intraocular changes were such that surgical treatment seemed hopeless. Spontaneous recovery occurred in 2 cases which demonstrated that in blast injuries in which there is no tear or split expectant treatment is justifiable; the visual results after reposition of detachment of the macula were good. Operations in 17 cases were successful in 11 and failed in 6, with recurrence of retinal detachment. These results of treatment compare ill with other types of retinal detachment occurring in a field force showing 86.8 per cent successes and 13.2 per cent failures. The gross intraocular damage caused to eyes by the severe contusion effects from war missiles traversing the orbit may be responsible for the less satisfactory results. The intraocular pressure is considerably reduced compared with other types of retinal detachment. In 2 of the author's cases it was less than 6.5 mm. of mercury and in others it remained for some months as low as 6 to 8 mm. of mercury.

British Journal of Tuberculosis, London

40:57-84 (April) 1946

Extraperiosteal Pneumothorax in the Tropics. O. Paneth.—p. 60.
Experiences with Promanide in Tuberculosis. R. Grenville-Mathers, D. Pickering and G. R. Hales.—p. 68.
Transthoracic Transpleural Ligature of First Part of Left Subclavian Artery. F. Braithwaite.—p. 74.

Lancet, London

1:913-948 (June 22) 1946

Population. A. S. Parkes.—p. 913.
Gonorrhea in Female: Diagnosis and Treatment. A. J. King and Eva Gallagher.—p. 916.
*Treatment of Lupus Vulgaris with Calciferol. G. B. Dowling and E. W. Prosser Thomas.—p. 919.
*Oral Administration of Penicillin to Infants. J. L. Henderson and I. W. J. McAdam.—p. 922.

Calciferol in Lupus Vulgaris.—Dowling and Thomas used calciferol (vitamin D_2) in the treatment of 40 cases of lupus vulgaris. Their results appear to have been similar to those observed in France. More than half of the cases appear to have been cured, others greatly improved, while about a fifth have been relatively unresponsive. Both toxic symptoms and hypercalcemia have occurred, but the symptoms have usually been mild and transient, disappearing immediately when the treatment has been stopped or the dose lowered; occasionally, however, the patients have felt ill for some weeks after cessation of the treatment. In cases of hypercalcemia the serum level has returned to normal in one to three months. The effect of the drug on the disease does not seem to be related either to symptoms of toxicity or to the serum calcium level. When hypercalcemia is noted it is advisable to stop treatment until the reading has become normal.

Oral Administration of Penicillin to Infants.—The frequency and seriousness of staphylococcic infections in young infants often indicate penicillin therapy, but difficulties in administration have prevented its routine use. Henderson and McAdam present the results of an investigation designed to show the degree and rate of absorption of penicillin from the alimentary tract in young infants. They estimated the penicillin content of the serum after administration by mouth in 37 infants, 28 of whom were less than a month old, and 9 from 1 to 12 months of age. All the infants were healthy except 3 in the neonatal group. In infants under a month old, adequate serum bacteriostasis was obtained for as long as fifteen hours after 100,000 units of penicillin given by mouth, and for six hours after 10,000; 5,000 units was an adequate oral dose for premature infants. In infants aged from a month to a year the administration of 100,000 units produced adequate serum bacteriostasis for six hours. Penicillin was given by mouth at regular intervals to 3 infants in the neonatal group with infections. They showed a higher degree of serum bacteriostasis than did the healthy infants in this group.

Helvetica Medica Acta, Basel

13:161-246 (May) 1946

Storage of Heparin in Cells of Reticuloendothelial System. W. Schürer.—p. 161.
The Waterhouse-Friderichsen Syndrome in Adults. L. Desbiolles.—p. 172.
*Spinal Cysticercosis: Clinical Aspects and Diagnosis. W. Bärtschi-Rochaix and J. de la Cuadra.—p. 192.
Neurosympathetic Electrocardiographic Changes in Long Distance Ski Runners. R. Stahel.—p. 198.
Method for Continuous Measurement of Blood Pressure in Man. B. Steinmann and K. von Gunten.—p. 214.
Connection Between Trauma and Chronic Pancreatitis. H. Cadotsch.—p. 234.

Spinal Cysticercosis.—Bärtschi-Rochaix and de la Cuadra report the history of an interned Polish laborer who exhibited symptoms suggestive of an intracranial or spinal disorder. Laminectomy from the third to the fifth thoracic vertebra was done and examination of the excised tissue revealed a spinal cysticercosis. A primary intracranial meningeal reaction was associated in this case with a severe and widespread spinal arachnitis characterized by a tabetiform condition (painful crises, spinal ataxia) as well as by an incomplete Brown-Séquard syndrome. Diagnosis of spinal arachnitis was made on the characteristic finding of the spinal puncture and by myelography. The etiologic diagnosis—rarely made in vivo—was confirmed by microscopic examination of the material removed by the neurosurgeon.

Acta Medica Scandinavica, Stockholm

124:213-314 (May 25) 1946

Myoglobin and Myoglobinuria. C. D. de Langen.—p. 213.
Treatment of Cushing's Syndrome. R. Luft.—p. 227.
*Diagnosis of Congestive Heart Failure. P. Brummer.—p. 252.
Toxic, Allergic and "Myxedematoid" Symptoms in Treatment of Thyrotoxicosis with Antithyroid Substances (Thiourea, Thiouracil, Methylthiouracil). K. Lundbaeck.—p. 266.
Basis of Renal Kinetic Theory. G. Ekehorn.—p. 282.
Comparison Between Kidney Changes in Case of "Crush Syndrome" and Renal Injuries Caused by Sulfathiazole. H. Bergstrand.—p. 309.

Proteinuria of Effort.—Salicylsulfonic acid precipitation experiments made by Brummer demonstrated that the protein content of urine can quickly and with accuracy be determined nephelometrically up to a content of 1 mg. per hundred cubic centimeters. It was found that the normal protein content of urine is less than 1 mg. per hundred cubic centimeters. After the performance of functional tests consisting of forty bendings of the knees, no proteinuria appeared in 15 to 17 healthy persons, and the protein content rose to slightly above 1 mg. per hundred cubic centimeters after exercise in only 2. In 14 patients between the ages of 18 and 44 years with renal disorder and in 13 between the ages of 50 and 72 years with congestive heart failure and in whom proteinuria was found during rest the protein content was usually increased after exercise. A transitory proteinuria appeared after exercise in 9 patients of an additional group of 22 with slight congestive heart failure between the ages of 22 and 76 years in whom no proteinuria was found at rest. It is concluded that proteinuria of rest above 1 mg. per hundred cubic centimeters and proteinuria of effort above 2 mg. per hundred cubic centimeters after the functional test described in patients suffering from heart disease but without kidney trouble points to congestive heart failure, although their absence does not exclude that possibility. There is no definite relationship between the protein content of urine during rest and after exercise and the severity of the heart failure. Both rest and effort proteinuria occur fairly generally in persons with predominant left-sided heart failure.

Book Notices

Evolution of Plastic Surgery. By Maxwell Maltz, B.S., M.D., Sc.D., Director, Department of Plastic and Reconstructive Surgery, West Side Hospital and Dispensary, New York. Fabrikold. Price $5. Pp. 368, with illustrations. New York: Froben Press, 1946.

This book represents an excellent and readable chronologic review and causative history of the early development of this reparative surgery. It is an absorbing story of men untrained by anything other than necessity, personal theories, large military experience and disease—so-called surgeons—endeavoring to repair the surface disabilities resulting from mutilations, warfare and pathologic changes. The early surgeon gained his main experience in the battlefield rather than by teaching in civil life. Much of the accomplishment was cosmetic in character. The text traces the evolutions and contributions of India, Egypt, Assyria, the Greeks, the Romans and the Arabs. These include skin grafts, pedicled flaps from the forehead, face and arm, sliding flaps, crude débridement, irrigation, wound closure by adhesive tape, stitches and clips, control of hemorrhage by pressure, cauterization and, finally, ligation. These crude efforts were the basis of many scientific developments since the advent of universities, hospitals and the present era which began with the teachings of Pasteur and Lister. The author discusses these developments through the centuries to the beginning of modern thought in the early eighteenth and subsequent centuries. He reviews the revival and development of the types of skin grafting, the conception and development of tubed pedicles for flaps, direct flaps and some of the late conceptions of wound management. The text emphasizes the evolutions of reparative surgery as a scientific art, with particular reference to disabilities of the face and nose. The author includes some excellent examples of such repair but does not discuss the management technic except in a few instances. Many of the modern major functional reconstructions about the face, neck and body are not discussed. The book is an excellent and interesting addition to the surgeon's library.

Personality Factors in Counseling. By Charles A. Curran, Ph.D. Preface by Michael J. Ready. Introduction by Carl R. Rogers, Professor of Psychology, University of Chicago, Chicago. Fabrikold. Price, $4. Pp. 287, with 11 illustrations. New York: Grune & Stratton, 1945.

The average physician has little need to know and hence cares little about the various technics which have been developed for personnel counseling in colleges and in industry. One of the most useful of these technics is an outgrowth of work which was done in the Hawthorne Plant of Western Electric and also at Ohio State University by Dr. Carl Rogers. This interviewing method is known as the nondirective technic, and the interviewer or counselor does little when using it but stimulate the person who wishes aid to discuss his problems in his own way until he understands something about himself and perhaps comes to some conclusion about solving his problems. The technic has proved to be useful with nonpsychiatric cases, particularly when plenty of time can be devoted to them, and has already shown itself to have a place in the psychotherapeutic armamentarium. The present volume deals with a thorough study of a single case in which twenty interviews were recorded, studied and analyzed and charted to show the development of insight in the person interviewed. The discussion is highly technical from the physician's point of view, although it is not unusually technical to the person who is oriented in modern nonmedical psychology. There is, however, a use of special terms, of symbols and unusual diagrams with which any person, even competent psychiatrists, may not be familiar. There is some discussion of other methods of dealing with case material as used by various psychologic investigators and there is a long discussion chapter on the implications for a philosophy of personality in which such phenomena as release, insight function, choice function, esteem and socialization and implications for further research or discussion are considered. There are three and a half pages of bibliography. For the industrial physician whose interest lies in counseling technics and the psychiatrist whose work impinges on this field, the book will have considerable value.

A Report on the Re-Adjustment in Civil Life of Soldiers Discharged from the Army on Account of Neurosis. By Eric Guttman, MD., M.R.C.P., and Elsie L. Thomas. Ministry of Health, Reports on Public Health and Medical Subjects, No. 93. Paper. Price, 1s 3d. Pp. 73, with 4 illustrations. London: His Majesty's Stationery Office, 1946.

In this study of the readjustment problems of some 380 enlisted British soldiers who had been discharged for neuropsychiatric reasons the investigators have reached conclusions which correspond with results of similar studies made in the United States, namely that the NP dischargees as a whole are not entirely recovered and readjusted; many feel self conscious, are unhappy in their private lives, are frequently absent from work are slow in returning to jobs and change jobs frequently. Although the study was made in England, the report closes with a paragraph which directly parallels the experience in the United States: "It seems fairly certain that the limited amount of psychiatric treatment in our sample was largely due to lack of psychiatric facilities in general and lack of acquaintance with the existing facilities on the side of general practitioners." The report is highly detailed and because of this has a limited field of interest.

Thérapeutique neurologique et psychiatrique. Par Paul Cossa, médecin neurologiste des Hôpitaux de Nice, E. Le Cocq, electroradiologiste des Hôpitaux de Nice, H. Bougeant, médecin de la Clinique Saint-Luc à Nice, et J. P. Grinda, chirurgien des Hôpitaux de Nice. Paper. Price, 420 francs Pp. 614, with 107 illustrations. Paris: Masson et Cie, 1945.

The appearance of this book, apparently within eight months of the liberation of France, is a dramatic illustration of how anxiously the devotees of medical science tried to keep abreast of matters pertaining to their science. Although specific references are not made, some of the conclusions indicate that the authors have been in touch with recent work in the United States, particularly in the use of shock treatment in mental disorders. From the standpoint of treatment, this book is primarily "organic." Methods of treatment which are primarily psychologic in nature are given little space. It consists of thirty chapters dealing with specific topics such as treatment of epilepsy, treatment of Parkinson's disease and other extrapyramidal conditions, treatment of peripheral syndromes of the face and the treatment of "mania" and "melancholia." There is a second part dealing with the technics of injections and surgical procedures, and the third part treats of x-ray therapy and nervous disorders. The book is very complete from the standpoint of organic treatment, including much discussion of shock treatment of the psychoses. Here the discussion includes the choice of shock treatments, contraindications and a thorough outline of the findings of various investigators about the best use of these technics. Much is made of x-ray therapy. Apparently the authors have more faith in it in the treatment of organic neurologic disorders than most neurologists do in this country. It is excellently put together, is quite up to date, and very thorough, if one allows for its definitely nonpsychologic tendencies. With this weakness in mind, it is a superior work in describing and discussing treatment to anything in English at the present time.

Principles of Human Physiology. Originally Written by Prof. E. H. Starling, M.D., F.R.C.P., C.M.G. Ninth edition by C. Lovatt Evans, D.Sc., F.R.C.P., F.R.S., Jodrell Professor of Physiology in University College, London. The chapters on the Special Senses by H. Hartridge, M.A., Sc.D., Professor of Physiology at St. Bartholomew's Medical College, London. Cloth. Price, $10. Pp. 1,155, with 668 illustrations. Philadelphia: Lea & Febiger, 1945.

The general format of this standard textbook is unaltered. The number of pages has been reduced appreciably, partly by more economical use of space. While the basic material is sound, this book has, through all previous editions as well as this one, failed generally to link up this fundamental information with practical everyday experience. For example, the extensive investigations in aviation physiology are mentioned only briefly despite the growing importance of this field to the physician, the dentist, the engineer and the traveling citizen. Illustrations have been reduced slightly. Photographs are generally reproduced poorly. There would seem to be little reason for taking up space with illustrations of a micromanipulator, a polygraph or an osmometer. Likewise there seems to be little excuse for pages of complex chemical formulas unless their significance is discussed in the text more extensively than is

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done in most instances. Subject matter is well selected and generally well balanced. Brief historical sketches introducing major sections are valuable. The author is conservative in drawing conclusions, and there can be little argument with the deductions. Endocrinology receives less emphasis than in most textbooks of physiology, a desirable feature. Students too often become overwhelmed with the dramatic mystery of the endocrines and develop a distorted comprehension of relationships.

Treatment by Ion Transfer (Iontophoresis). By D. Abramowitsch, M.D., Physician in Charge of the Physiotherapy Department, Lincoln Hospital, New York City, and B. Neoussikine, M.D. Cloth. Price, $4.50. Pp. 186. New York: Grune & Stratton, 1946.

This monograph is divided into two parts. Part I satisfactorily presents basic features of the physical characteristics of electric current and its adaptation to the technics of ion transfer. This will be especially appreciated by the uninitiated as well as being a good review for the physician who may wish to undertake this type of therapy.

Part II describes therapeutic procedures reputed to be indicated for various diseases of the nervous and locomotor systems, skin, genitourinary system, eyes, ears, nose and throat and for miscellaneous conditions. The various chapters are essentially a compilation and abstract of many references to the medical literature, and the reader is likely to be disappointed in not having more benefit of the authors' experience and critical evaluation of the many references cited.

The addition of significantly detailed case histories, photographs and diagrams would improve the presentation and would permit the reader a more substantial basis for formulating his own opinion.

The reader will find it difficult to accept unconditionally the apparently empirical basis for use of many different chemicals in the treatment of a single disease, or of the same drug in so many apparently unrelated conditions. This suggests a lack of specificity of the use of ion transfer in therapy, an opinion with which many physiatrists would agree.

It is doubtful that the use of dangerous drugs such as aconitine, dinitrophenol and radium needs to be considered in ion transfer.

The emphasis placed by the authors on the advisability and necessity for supervision of this form of physical therapy by a trained physician will be applauded by all those who are interested in the proper development of physical medicine.

More than two thirds of the extensive bibliography is foreign. Only 10 per cent of the references cited have appeared since 1940, and 63 per cent of references are more than ten years old. This might indicate that ion transfer plays a minor role in modern physical therapeutics. Those interested in this treatment, however, will find the book helpful.

The authors are to be complimented for having accumulated so much information in one volume concerning this little understood subject.

Ritmo y fatiga: Problemas que plantea la hipotesis de la energia mental. Por el Dr. Horacio J. A. Rimoldi. Tesis, Universidad nacional de Buenos Aires, Facultad de ciencias médicas. Paper. Pp. 189, with illustrations. Buenos Aires, 1945.

The term "fatigue," in common medical as well as popular usage, involves problems of semantics so serious as to make scientific investigation unsatisfactory without more rigorous definition. Fundamentally, we must admit that the only common feature in the various fatigue states is an incapacity, or unwillingness, to maintain activity at a reasonably "normal" level. The causes, and therefore the proper treatments, in the several types are numerous and extraordinarily complex. The present book is to be commended as an evidence of recognition that fatigue is important to society and that its study is a responsibility of the medical sciences. The idea that working rhythm bears a relation to the development of fatigue is not new nor do the present studies suggest wide applications of value in fatigued individuals or groups. In spite of much discussion of statistical significance the basic biologic significance remains elusive.

Essentials of Neuro-Psychiatry: A Textbook of Nervous and Mental Disorders. By David M. Oikon, S.B., A.M., M.D., Associate Professor of Psychiatry, College of Medicine, University of Illinois, Chicago. Cloth. Price, $4.50. Pp. 310, with 138 illustrations. Philadelphia: Lea & Febiger, 1945.

This small volume attempts to cover a great deal of ground. Strictly speaking it is not "a textbook of nervous and mental disorders," despite its subtitle, for it is primarily a rather brief outline of psychiatry, and there is little discussion of neurology, neuropathology and psychodynamics. Such topics as the neuroses and psychoneuroses cannot be comprehensively detailed within such small space. The discussion of specific mental conditions, including the psychoneuroses, is rather vague and generalized and perhaps is insufficient for textbook purposes. For instance, chapter 12, on therapy of the psychoneuroses, is seven pages long and includes medicinal treatment, psychiatric treatment, psychotherapy and suggestion, each topic having devoted to it one page. The most thorough discussion in the book is devoted to the capillary system in health and disease, a research subject to which the author is particularly devoted. Here in counterdistinction to the shorter chapters there are almost thirty pages, including a one hundred and one page bibliography. The volume is divided into five parts, the first on general considerations, in which intelligence, behavior, consciousness, affective states and psychoneuroses are discussed. The second part, on major personality disorders, deals primarily with schizophrenia and manic depressive psychoses. The third part takes up the aforementioned discussion of the capillary system, convulsive disorders and poisonings. The fourth consists in a discussion of the organized psychoses and endocrine deficiencies. The final part includes a discussion of the psychopathic state, speech disturbances and a brief discussion of the various psychologies, such as those of Freud, Meyer, Jung and Adler. The final two chapters deal with history taking and with the effect of war and army life. The book is well illustreated, many of the illustrations being new and very adequate. Its great weakness is its attempt to cover too much material in too little space and its particular advantage is its thorough coverage of capillary research with regard to mental disease.

The Mosquitoes of the Southern United States East of Oklahoma and Texas. By Stanley J. Carpenter, Entomologist, National Biscuit Company, New York, Woodrow W. Middlekauff, Assistant Professor of Economic Entomology, University of California, Berkeley, and Roy W. Chamberlain, 1st. Lt., Sanitary Corps, A. U. S. The American Midland Naturalist Monograph No. 3. Edited by Theodor Just. Fabrikold. Price $4. Pp. 292, with 155 illustrations. Notre Dame, Indiana: University Press, 1946.

This book might be viewed as the result of intensified efforts to solve problems of military health arising from the establishment of troop concentrations in malarious or potentially malarious areas. It is, in the main, one of pure taxonomy, dealing with the mosquitoes of the southeastern region of the United States. The first fifty pages are filled with what seem to be the necessary encruements for the preparation of a taxonomic work. Short discussions are given to generalized life histories, the relationship of certain genera to disease, the technics for collecting and preserving specimens and various identification procedures. Following the preliminary statements each genus is taken up and keys are presented for adult females, male terminalia and larvae. Each species is described completely as to the characteristics of the male and female, the larvae, distribution of the species, bionomics and its relation to disease. The genus Culiseta is used, replacing Theobaldia, and a new species, Psorophora longipalpis Roth, is included. As mentioned, the war naturally stimulated taxonomic studies of insects of medical importance. It is unfortunate but inevitable that more time could not have been devoted to the actual biology of mosquitoes, since in a book of this type the repetition of stereotyped phrases concerning technics for mosquito taxonomy, bionomics and their various concomitants grow wearisome. However, the book is valuable in that it represents, as the authors say, "an up-to-date account" of the southeastern mosquitoes. It is profusely illustrated, and the individual characteristics of each species are discussed in complete and vivid detail.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

MILK AND PATHOGENESIS OF DUODENAL ULCER

To the Editor:—Would a person with hyperacidity of the stomach, who has always had plenty of milk to drink, be more likely to develop a duodenal ulcer if he is deprived of milk for a period of several months?

John H. Kendall, M.D., Clinton, N. C.

ANSWER.—If the milk is drunk regularly between meals, discontinuance may be a factor in the development of an active duodenal ulcer. On the other hand, if the milk is drunk with and not between meals, discontinuance could not produce a duodenal ulcer. The value of milk in this respect depends almost entirely on its ability to reduce the acidity of the gastric content. Such an effect is much shorter in duration than the four to five hours which usually elapse between meals. This is especially true in persons who secrete large volumes of acid gastric juice. Hence it is necessary to drink milk or take any other substance which reduces gastric acidity by neutralization, dilution or both at frequent and regular intervals between meals if a therapeutic effect is to be attained. It should be noted that skimmed milk is less effective in reducing the acidity of the gastric contents than is whole milk, and this in turn is less effective than whole milk with added cream and alkalis. Furthermore, a program carried out only during the day has little effect on the night secretion, which is thought by some to be of considerable importance in the pathogenesis of duodenal ulcer.

Obviously no categorical answer can be given to the question raised with regard to a single patient. Under a certain set of conditions, however, it seems possible that the discontinuance of milk might favor the development of an active duodenal ulcer.

Reference:

Palmer, Walter L.: Diseases of the Stomach, in Barr's Modern Medical Therapy in General Practice, 1940.

RELATION OF SPLENECTOMY AND SUSCEPTIBILITY TO INFECTION

To the Editor:—A boy aged 4½ years, suffered internal injuries in an automobile accident. A diagnosis of ruptured spleen was made and splenectomy was performed. During hospitalization several transfusions were given. After two weeks the patient was discharged. One week later he was rehospitalized with a high fever of undetermined origin. After five days he was discharged. One week later he was again readmitted with high fever. The diagnosis was malaria, which apparently had been contracted during the blood transfusions. Treatment with quinacrine hydrochloride was given. Three months and again one year later pneumococcic septicemia developed, which was successfully treated each time with penicillin and sulfadiazine. During both occurrences of septicemia the white blood cell count ranged from 50,000 to 100,000. Can these repeated infections be attributed to increased susceptibility to infection because of the splenectomy? Is the unusually high white blood cell count related to the splenectomy?

Harry Hallarman, M.D., New York.

ANSWER.—There is little doubt that the spleen plays a part in the production of protective antibodies. However, since increased susceptibility to infection is not a well recognized phenomenon in splenectomized persons, it appears that the reticuloendothelial system in other parts of the body furnishes an adequate concentration of antibodies. There are a few isolated instances of severe infection following the removal of the spleen (Abbott, K. H.: *California & West. Med.* **48**:332, 1938 and Latten, W.: *München. med. Wchnschr.* **88**:517, 1941) but a purely coincidental relationship cannot be excluded. It has been shown that removal of the spleen in guinea pigs has no effect on the production of agglutinins and protective antibodies after the intraperitoneal injection of typhoid bacilli (Deutsch, L.: *Ann. Inst. Pasteur* **13**:639, 1899).

Following recovery from splenectomy there is little evidence that infection produces excessively high leukocytic reactions. Counts of 50,000 to 100,000 are not uncommon in severe infections in young children who have not had a splenectomy.

The relation of the splenectomy to the repeated infections and excessive leukocytosis in the case described in the query is highly questionable.

OCCUPATIONAL HAZARD FROM SODIUM NITRATE AND MYELOID LEUKEMIA

To the Editor:—A man aged 50 was employed as a car repairer for a coal mine and was exposed to fumes from sodium nitrate in the following manner: Cutting machine bits were heated to a white heat, passed through vegetable oil and then into a 60 gallon vat of sodium nitrate that had been liquefied by intense heat from electric heaters up to a temperature of 500 F. The concrete building was poorly ventilated, and the fumes generated from this heated metal in melted sodium nitrate were unbearable. After continuous exposure for two or three months the patient became a very sick man, the sickness being characterized by extreme weakness, nervousness, anorexia and insomnia. He lost about 31 pounds (14 Kg.) in ninety days and became very jaundiced. At this time he developed a pain in the upper left quadrant of the abdomen, and on examination an enlarged spleen was found. Blood examination disclosed a picture resembling myeloid leukemia. Diagnoses of myeloid leukemia and chronic methemoglobinemia were considered but not confirmed. The patient remained away from work for two and one-half months, during which time he made considerable improvement. He then returned to work for two and one-half months but was forced to stop again. He has been unable to resume work on account of this exposure. He states that two co-workers who were on the job in the same building at the time he was working died without a satisfactory diagnosis. The men working under these fumes did not become rapidly unconcious but were drowsy, which differs in degree from carbon monoxide poisoning. A rat placed in a cage in the building died in a few hours in a condition resembling carbon monoxide poisoning. Birds that nested in the loft died in their nests. Rats left home or died in their holes. What is the chemical given off in the fumes of superheated sodium nitrate and what if any, effect might it have on the blood and blood-forming tissues?

A. J. Butner, M.D., Harrisburg, Ill.

ANSWER.—This query is more complex than may be apparent. If the temperature of the electric heater does not exceed 500 F., this will not be sufficient to fuse sodium nitrate, which has a melting point of 585 F. Substances other than sodium nitrate may be admixed, usually sodium nitrite. In any event, emanations from the bath will represent sodium nitrate and sodium nitrite. If considerably higher temperatures are reached, such as 600 F., some decomposition of the nitrite may occur with the evolution of one of the nitrogen oxides, N_2O_3. None of these substances will induce the clinical and laboratory pictures stated in the query. The nitrite rather than the nitrate is toxic, leading to the cardinal subjective manifestation of headache and the objective finding of lowered blood pressure after recent exposure. The oxide of nitrogen, if present in appreciable quantities, may induce pulmonary edema. Some of the symptoms mentioned in the query such as weakness, anorexia and insomnia may be related to nitrite fumes. It is noted that prior to the sodium nitrate treatment the metallic bits were subjected to white heat, but the method of heating is not stated. If the process is as usual in open fuel fires, the probability of carbon monoxide poisoning exists. This carbon monoxide gas may account for the death of the animals mentioned. If methemoglobinemia exists, this finding is associated with nitrite fumes rather than with carbon monoxide gas. None of the substances mentioned may be expected to produce a blood picture simulating myeloid leukemia or the clinical finding of enlarged spleen or jaundice. The improvement of a patient during the period away from work may represent a remission, which is somewhat characteristic of leukemia. The general inference is that here is a patient with leukemia from a cause unrelated to work, who in addition may have been exposed to sodium nitrite, carbon monoxide and remotely one oxide of nitrogen. Better to appraise the situation, the following steps are suggested:

(*a*) Determine the blood pressure of other workers similarly exposed.

(*b*) Make measurements for carbon monoxide if bits are first heated other than by electricity.

(*c*) Establish the exact nature of the substance specified as sodium nitrate for admixtures such as sodium nitrite.

(*d*) Make determination of the degree of blood saturation with carbon monoxide if any indication for it appears.

In the event of any finding of substantial quantities of either carbon monoxide or nitrite fumes, adequate ventilation should be introduced.

TIMING OF WRIST WATCH AND PULSE RATE

To the Editor:—Is there any scientific evidence that a wrist watch will speed up or slow down in accordance with a patient's pulse rate?

M.D., Rhode Island.

ANSWER.—There has been no scientific evidence that a patient's pulse rate will have any effect on the timing of a wrist watch. True, a watch will keep different time in different positions, so that wide movements of the arm may have a slight effect if the timing is observed over a period of many days. However, the minute kinetic variations induced by changes in pulse rate would probably have no discernible effect on the timing of the wrist watch.

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SULFONAMIDES AND PENICILLIN FOR MUMPS AND GERMAN MEASLES

To the Editor:—This city currently has a high incidence of mumps and German measles, with a peculiar predilection for adolescents and adults rather than for children. Complications therefore are much more frequent than usual. The adenopathy of German measles is extensive, often appears a long time before the rash and persists for weeks thereafter. The nodes are both painful and tender. In mumps there are many cases of oophoritis and epididymitis, with fever up to 104 F. and severe pain. Can penicillin and/or the sulfonamides be expected to be useful in combating these severe complications?

Walter Newman, M.D., Springfield, Mass.

ANSWER.—It is extremely questionable if the sulfonamides are of value in the treatment of mumps. Even when administered early in the course of epidemic parotitis it seems certain that the sulfonamides exert no influence in preventing complications. In case of secondary infections it is reasonable to expect that the sulfonamides would be beneficial.

In two contagious disease hospitals where penicillin has been prescribed for patients with mumps, evidence was not found that this drug altered the course of the disease.

Ordinarily because German measles in a mild type of infection and complications are insignificant, special therapy is not required. However, should adenopathy be extensive, there would be no objection to administering either sulfonamides or penicillin. There is still considerable difference of opinion as to whether either of these drugs is really helpful in the treatment of adenopathy that is nonsuppurative.

TOXICITY OF LEAD ACETATE

To the Editor:—Several patients use a strong aqueous solution of lead acetate in their employment. Can any of this chemical be absorbed through the intact skin? If the solution is heated to below its boiling point is there a hazard via the respiratory tract? In what industries are strong solutions of lead acetate used?

M.D., Massachusetts.

ANSWER.—Lead acetate is not absorbed through the intact skin. There is little if any hazard of systemic poisoning from inhalation of whatever lead acetate comes off a solution that is heated below its boiling point. Lead acetate is used in the manufacture of lead salts, alum mordants, lead driers, lead resinate, lead arsenate, lead oleate, printing inks, chrome red, chrome orange and chrome yellow. It is used in lead plating, as a mordant, in dyeing and printing textiles, as a drier in paints and varnishes, in weighting silks, in waterproofing textiles, in refining sugar and in medicine.

A solution of lead subacetate and tincture of opium has been used in medicine as a wet dressing to allay inflammations. Liquor plumbi subacetatis has also been used in the same way for many years to allay pain and inflammation. No cases of lead intoxication have been reported from the use of these two preparations.

For further information regarding the absorption of lead the inquirer is referred to L. T. Fairhall, Sr. Scientist (R), Industrial Hygiene Division, Bureau of State Services, NIH, Bethesda 14, Md., and Dr. Robert A. Kehoe, Kettering Laboratory, College of Medicine, Cincinnati 19.

CONTINUOUS CAUDAL ANESTHESIA

To the Editor:—Is there any method for continuous caudal anesthesia which can be used in obstetrics? Reinsertion of the needle at thirty minute intervals, besides increasing the hazard of infection, would become a tedious ordeal for any patient should it be necessary to continue the anesthesia for thirty hours as described by Hinson and Edwards in THE JOURNAL, Jan. 23, 1943, page 225. 2. Where can the special needle and the Moore Introducer described by Hand in The Journal, Jan. 2, 1943, page 32, be obtained? Can this apparatus be used for caudal anesthesia?

M.D., New York.

ANSWER.—1. There is a satisfactory method for the continuous needle or catheter methods for administering caudal anesthesia. Both needles and catheter can be left in place for a prolonged period during the administration of obstetric anesthesia. Procaine hydrochloride is commonly recommended, but metycaine hydrochloride can also be used successfully.

2. The special needle recommended for continuous spinal anesthesia is manufactured by the Becton and Dickinson Instrument Company. The Moore introducer or groove-director introducer is manufactured by the McGregor Instrument Company, Needham, Mass. The introducer may be of value in making the initial cutaneous punctures but not for the establishment or location of the caudal canal. A continuous spinal needle may be used for caudal anesthesia. A special needle manufactured by the Becton and Dickinson Instrument Company and devised for this particular technic is preferable.

SALT TASTE AND BLACK BATH WATER AFTER DIPHENYLHYDANTOIN SODIUM

To the Editor:—A man aged 46 has taken diphenylhydantoin (dilantin) sodium for many years with complete control of epileptic seizures. Recently the drug was withdrawn in the hope that the seizures would continue to remain quiescent. A few days after withdrawal the patient noticed a decided salt taste which persisted for a number of days. Since taking diphenylhydantoin sodium during the past three years he also has noticed that in bathing the bath water turns a grayish black. The blackish precipitate in the bath water appears before the use of soap and becomes noticeable in the presence of soap. What is the cause of the salty taste in his mouth and the blackish precipitate in the bath water?

James Frenkil, M.D., Baltimore.

ANSWER.—As far as known, neither a blackish precipitate on bathing nor a salty taste in the mouth on withdrawal of diphenylhydantoin sodium has been reported or observed before. Both symptoms are probably coincidences. No colored products are known to result from a breakdown of the drug.

PLASTIC SURGERY AFTER RADICAL BREAST AMPUTATION

To the Editor:—Is a plastic operation advisable for a woman aged 33 who had a radical breast amputation one year ago for cancer? She has been unable to obtain a proper prosthetic appliance in England. As she is required to wear an evening gown frequently, the patient is anxious to have a plastic operation.

M.D., New York.

ANSWER—The prognosis for a patient as young as 33 with carcinoma of the breast is not favorable. If possible, information should be obtained about the extent of invasion of the axillary lymph nodes observed at the time the radical amputation of the breast was performed. If there were no metastases a plastic operation might be condoned, but the possibilities of disappointment in the outcome should be fully explained to the patient. If prosthetic appliances of rubber or plastic cannot be obtained, a cone shaped one made of cloth and stuffed with felt or cotton should be available and may even be made at home. It would seem that an evening gown might be worn in which the latter appliance would be entirely satisfactory.

HARRISON SPOT TEST FOR URINE BILIRUBIN

To the Editor:—Please describe the Harrison spot test for bilirubin in the urine (Harrison, G. A.: Chemical Methods in Clinical Medicine, London, J. & A. Churchill, 1937. Does it have any advantages over Hammarsten's test?

Clifford W. Atherton, M.D., Stambaugh, Mich.

ANSWER.—Tests for bilirubin in the urine, which include concentration of the pigment before the addition of a color producing oxidizing reagent, are much more sensitive than those done with unconcentrated urine. Most of the concentration methods include the addition of barium chloride to the urine, which causes the precipitation of barium phosphate and barium sulfate with adsorption of bilirubin and possibly the precipitation of barium bilirubinate, so that by filtration or centrifugation the greater part of the bilirubin is obtained in the precipitate. The Harrison spot test is conducted as follows:

Add to 10 cc. of urine 5 cc. of a 10 per cent solution of barium chloride, mix and filter. Spread filter paper on dry filter paper. Add one to two drops of Fouchet's reagent (trichloroacetic acid 25 Gm., water 100 cc. and 10 per cent solution of ferric chloride 10 cc.); a positive reaction gives a blue to green color (Godfried, E. G.: Clinical Tests for Bilirubin in Urine, *Biochem. J.* **28**:2056 [part 2] 1934).

In an article entitled Comparison of Tests for Bilirubin in the Urine, Alvin G. Foord and Cecil Baisinger (*Am. J. Clin. Path.* **10**:238 [March] 1940) state that the Harrison spot test was found to be as sensitive as any other of the concentration methods. It is also a very simple test from the technician's standpoint. It is more sensitive than Hammersten's test (Sahli, Herman: Diagnostic Methods, Philadelphia, W. B. Saunders Company, 1905).

MAGNESIUM SULFATE AND CALCIUM METABOLISM

To the Editor:—What is the effect on flat bones of magnesium sulfate in purgative doses every two to four days over a period of several years? I am interested in a case of undetermined cause of separation of the occipitoparietal sutures causing considerable depressions without local subjective symptoms.

M.D., Georgia

ANSWER.—There is nothing to indicate that prolonged use of magnesium sulfate will have any deleterious effect on calcium metabolism. An enormous amount of magnesium sulfate is used by the public as a purgative. It would seem that the medical literature would contain some report before this if the drug was harmful to bone metabolism.

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SIGNIFICANCE OF POSITIVE WEIL-FELIX REACTION IN DIAGNOSTIC PROBLEM

To the Editor:—A man aged 34 complains of dizziness and vomiting of six weeks' duration. The first attack occurred after drinking two bottles of beer and lasted one day. After three days' freedom from symptoms, dizziness and vomiting were present continuously. The patient was knocked unconscious thirty years ago but had no intervening symptoms. Cholecystectomy, appendectomy and repair of incisional hernia have been performed during the past eight years. He has been a meat manager in supermarkets for about twelve years. He smokes over a pack of cigarets a day and takes occasional alcoholic beverages and occasionally a Bromo Seltzer. Otherwise the history is noncontributory. On physical examination the temperature was 99.2 F., the pulse rate 104, the respiratory rate 20 and the blood pressure 150/110. He was well nourished, of hypersthenic build and intelligent but obviously disturbed. No tremors were present. Tendon reflexes were normal. Physical examination was negative including neurologic examination (and Bárány test). Laboratory examination revealed hemoglobin 92 per cent (Sahli), red blood cells 4,500,000, white cells 13,000 with polymorphonuclears 56 per cent, lymphocytes 42 per cent and monocytes 2 per cent. Urinalysis was negative. A skin test for brucellosis was negative. X-ray examination of the chest was negative. Blood agglutination tests for undulant fever, paratyphoid A and paratyphoid B were negative. The Widal test was negative. Test for tularemia was negative. The Weil-Felix test for Proteus OX19 was positive (repeated) 1 : 160 and 1 : 80. Stool culture revealed Escherichia. Blood culture was sterile. The blood serologic reaction was negative. Psychogenic origin of his symptoms has been considered. What further studies are indicated? Does a low grade typhus or Rocky Mountain spotted fever which can be acquired by meat and food handlers occur without the usual textbook picture?

Morton Silverman, M.D., Allentown, Pa.

ANSWER.—The patient has been rather thoroughly investigated. The positive findings are the history, the low grade fever, the mild lymphocytosis and the positive Weil-Felix test. It should be remembered that the Weil-Felix reaction is not a specific reaction in the case of typhus or Rocky Mountain spotted fever in the same sense that the Widal test is specific for typhoid. Therefore, in the absence of clinical symptoms a positive Weil-Felix reaction cannot be considered too seriously. The history of vomiting for six weeks without loss of weight strongly suggests a functional disorder. However, before concluding that the symptoms are all on a psychogenic basis, a few further investigations should be carried out. The continued fever and the lymphocytosis suggest the possibility of infectious mononucleosis, for which heterophil antigen determination would be helpful. Long continued fever always raises the suspicion of tuberculosis in spite of the negative chest plate. It is assumed that neurologic examination has ruled out possible cerebellar or labyrinthine disease.

TESTOSTERONE AND CARCINOMA OF PROSTATE

To the Editor:—A man aged 46 with impotentia coeundi has been administering 25 mg. of methyl testosterone to himself every other day for the past year with gratifying results. The patient now insists on having a pellet of testosterone propionate inserted in his thigh. Can the administration of 25 mg. of methyl testosterone every other day be continued indefinitely or could the pellet be inserted without danger of eventually causing cancer of the prostate?

M.D., New Jersey.

ANSWER.—Testosterone propionate is probably more effective when administered by injection than when implanted in the form of pellets. There would be no objection to a trial of the material in pellets. The danger of the development of carcinoma of the prostate is no greater with one form of administration than with another.

Carcinoma of the prostate apparently occurs rarely in a patient who is receiving treatment with testosterone propionate; the medicament may be given when indicated without worrying about its carcinogenic properties. Every patient receiving it should be carefully examined to make sure that carcinoma of the prostate is not present before treatment is started. Under such circumstances the treatment, of course, would not be given. If carcinoma is not present initially, the likelihood of inducing it with testosterone propionate is evidently so slight that it may be disregarded.

INSTITUTIONAL CARE OF HUNTINGTON'S CHOREA

To the Editor:—Please discuss the care of patients with Huntington's chorea. What institutions are equipped to care for such patients?

M. E. Friedman, M.D., New Buffalo, Mich.

ANSWER.—Patients with Huntington's chorea are ordinarily treated in a hospital for mental diseases, either private or a state institution. Most of the state hospitals have one or more cases and are familiar with the care of the hereditary type of chorea. Any well run private institution that has beds available for patients with chronic diseases should also be equipped to care for patients of this type.

TOXICITY OF SOLUTION OF NAPHTHA DISTILLATE PYROETHYLENE AND CEDAR OIL

To the Editor:—Is the liquid solution consisting of naphtha distillate, pyroethylene and cedar oil injurious to persons whose skin has been in contact with it for periods ranging from one minute to eight hours?

Norman E. Bennett, New York.

ANSWER.—The chemicals named do not sufficiently identify the ingredients of the solution; for instance, naphtha distillate may be any one of four or five chemical compounds which differ in their properties: (1) naphtha aromatic, (2) naphtha blending, (3) naphtha cleaners, (4) naphtha coal tar or (5) naphtha rosin. However, all five are fat solvents and will cause dermatitis if they remain on the skin in strong concentration for eight hours.

Pyroethylene is probably a trade name for ethylene sold by a particular firm. Ethylene is a colorless inflammable gas and under ordinary temperature has a sweet odor; it is used as a ripening agent and insecticide on certain fruits. In the gaseous form it will not cause dermatitis.

Cedar oil may be derived from the cedar nut or the cedar wood. The oil from the nut is edible. The oil from the wood has an agreeable odor and is used in perfumery and as an insect repellant or insecticide. Cases of sensitivity to cedar wood have been reported.

From the ingredients, it seems that the solution is used as an insecticidal spray. It may cause dermatitis from the fat solvent properties of the naphtha solvent and it may also cause allergic dermatitis from the cedar oil content. The greater the quantity and the longer it remains on the skin, the more likely is it to cause dermatitis. It is doubtful whether one contact for one minute would cause dermatitis, but continuous contact with large quantities for eight hours would certainly do so.

Inhaling the vapors of naphtha for eight hours may cause headache and other systemic symptoms. Ethylene has not been reported as having caused industrial systemic poisoning.

HEREDITY AND CRETINISM

To the Editor:—A woman aged 28 has a child aged 3 who is a cretin. This is not a goiter area. Both parents and grandparents are healthy, and there is no goiter in the family. They always use iodized salt. Should this woman be allowed to have another baby? What are the chances of a recurrence in subsequent pregnancies?

M.D., Manitoba, Canada.

ANSWER.—This patient should have no hesitation about having other children. The risk of her having another cretin is so slight that it may be disregarded. A cretinous child like this one is known as a sporadic cretin. Sporadic cretins are born here and there, in goitrous and nongoitrous areas, as the offspring of healthy parents. The cause is unknown.

It would be desirable for the mother before becoming pregnant again to have a basal metabolic test in order to check her thyroid function. If there is any depression of the basal metabolic rate it would be well for her to take desiccated thyroid as well as iodized salt. Mothers who have hypothyroidism are more liable to give birth to cretinous offspring than mothers whose thyroid function is normal.

It would also be well for the thyroid function of the father to be checked in a similar manner before further attempts at pregnancy. If he has hypothyroidism, he should begin the same treatment as the mother.

ACTIVITY AFTER RECOVERY FROM CORONARY THROMBOSIS WITH HYPERTENSION

To the Editor:—A man aged 44, a civil engineer who retired from the army in 1943 because of hypertension, developed a posterior coronary thrombosis with myocardial infarction on Jan. 3, 1946. He made an uneventful recovery, was allowed out of bed in four weeks and was fully ambulatory in six weeks. He has had no symptoms after the usual activity attendant on daily living but has not returned to work. The blood pressure is now 160/110. Cardiac examination is negative. The sedimentation rate remains elevated to 33 mm. The electrocardiogram shows no further changes. How soon may the patient be allowed to drive his own car?

M. C., A. U. S.

ANSWER.—Since it is three months after the onset of the myocardial infarction and recovery from it has been uneventful, the patient may be allowed to resume his usual activity, avoiding excessive strain. The hypertension is more important, however, from the standpoint of future strain and hazard than the myocardial infarction, which has been well weathered. This man should have his hypertensive status investigated and indications determined for or against lumbodorsal sympathectomy; that is, he should undergo the so-called hypertensive work-up. The ordinary precautions for hypertensive patients will also be applicable to his coronary heart disease.

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